





Welcome to the Macintosh II Sales Information Kit.

Enclosed is a complete set of materials designed to help you increase your sales of Macintosh II solutions. In this Macintosh II Sales Information Kit you'll find materials that will allow you to do the following:

- Train yourself on the key benefits of the Macintosh II for mainstream business.
- Give an individual or seminar presentation about the Macintosh II.
- Give an in-store demonstration on the power of the Macintosh II.
- Conduct a training session for your clients on the Macintosh II.
- Present a customer orientation on the Macintosh II.

The first step in reviewing your Macintosh II Sales Information Kit is to carefully read through the Product Orientation Guide. This guide is designed to provide an overview of the components of the kit, explaining their objectives and intended uses. You will find this guide behind the first tab in your binder.

An order form has also been provided behind the first tab, in case you need additional copies of the Macintosh II Sales Information Kit.

Good selling!
Apple Computer, Inc.



Macintosh II Program Orientation Guide



Macintosh II Program Orientation Guide

Macintosh II Program Orientation Guide

July 1988

The Macintosh II Sales Information Kit contains the information you need to give successful seminars and presentations that demonstrate the capabilities of the Apple® Macintosh® II personal computer as a mainstream business solution.

All the materials developed for this kit can be tailored to meet your individual presentation needs. All it takes is a little planning and preparation on your part.

Tab 1. Program Orientation

Behind this tab, you will find the following:

- Macintosh II Program Orientation Guide: This guide is designed to provide an overview of the components of the kit, explaining their objectives and intended uses.
- Macintosh II Sales Information Kit Order Form: For additional copies of this sales kit, please fill in the preaddressed form.
 These additional copies are provided free of charge.

Tab 2. Demonstrations

The Macintosh II Business Solutions Demo is designed to introduce a novice user to the features and capabilities of the Macintosh II, while showing how the Macintosh II fits into mainstream business. The demo offers examples of a variety of business solutions, including desktop publishing, desktop presentations, word processing, spreadsheets, and databases. These examples are designed to help your customers understand that the Macintosh II can meet a variety of business needs.

To run the Macintosh II Business Solutions Demo, you will need a Macintosh II Hard Disk 40 CPU with 2 megabytes of RAM, an Apple Keyboard or Apple Extended Keyboard, an AppleColor™ High-Resolution RGB Monitor, a Macintosh II Video Card, and a Macintosh II Video Card Expansion Kit. This demo consists of five disks.

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The Macintosh II Business Solutions Demo can be used in several ways. You can:

- Run it on the Macintosh II in your showroom.
- Install it in your Macintosh II seed units. Have your client run the demo during times when no one is using the seed unit for other people to view.
- Use the demo as an introductory sales tool, to help your customers begin to understand the Macintosh system's capabilities. Sit with your client at the Macintosh II while the demo is running, and answer any questions that arise.

Tab 3. Customer Presentations

The Macintosh II Business Systems Presentation is designed to give your customers a solid understanding of the Macintosh II product family. It covers in detail the Macintosh II, describes all the Apple peripherals, and hits the key points about MS-DOS integration, networking, and host connectivity. This presentation also includes information about Apple's future strategies.

Overhead Slides: Included in this kit are printed copies of the PowerPoint overheads used to illustrate the presentation. Copy these sheets onto acetate for use with an overhead projector.

Macintosh II Business Systems Presentation Disk: A PowerPoint version of the presentation is included on disk, so that you can make changes as needed.

Tab 4. MS-DOS Integration

In this section, you will find copies of a brochure with the headline "As uncertainty grows around changing computer standards, a couple of questions come to mind." This brochure illustrates the capability of the Macintosh to connect to the MS-DOS world, and includes information on the various ways that your clients with MS-DOS systems might benefit from Macintosh use. This brochure will be available on the September 15 confidential Dealer Price List (Part No. M5284).

The brochure's "call to action" tells your clients to request an MS-DOS disk (5.25-inch) titled The Compatibility Guide: An MS-DOS View of Macintosh. This interactive disk was developed for Apple by the same firm that developed the Buick Dimensions disk that you may have seen at MacworldSM, and is designed to speak to MS-DOS users in terms they can readily understand. We think you will find it a useful tool to help MS-DOS users locate appropriate compatibility solutions. The disk will be available on the September 15 Dealer Price List (Part No. M5304).

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Also included in this section is Apple and third-party literature that illustrates MS-DOS integration.

Tab 5. Literature

Behind this tab, you will find various article reprints, including the following:

- Macintosh II vs. IBM PS/2 Model 80 (Macintosh Business Review).
 This article provides a detailed comparison of the Macintosh II and IBM's Model 80 in terms of performance, features, software, and pricing.
- Where Worlds Meet: Microsoft Windows Crosses the Finder's Path (*Macintosh Today*). This article points out many of the advantages of the Macintosh with MultiFinder[™] as compared with an MS-DOS system running Windows. (Many customers believe that Microsoft Windows is essentially a Macintosh implementation on IBM and compatible machines.)

Also included behind this tab are copies of the Macintosh Family Brochure. This brochure has been updated to include the latest Macintosh products and peripherals.

Tab 6. Product Information

Behind this tab, you'll find the Macintosh II Product Guide, which is designed to provide you with the most current information available regarding new products for the Macintosh II. These products take full advantage of the powerful features of the Macintosh II, including its large screen and color capability. This list is updated monthly on AppleLink® under the Third Party Programs icon.

Tab 7. Miscellaneous

This tab is provided for any additional information you may want to keep as part of your Macintosh II Sales Information Kit.

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Order Form

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Complete this preaddressed order form if you would like to receive additional Macintosh II Sales Information Kits.

Please allow 3 to 4 weeks for delivery.

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Address	
City	State
Zip	Phone
AppleLink® Address	
Number of Kits Requested	-
How do you plan to use the ! Check all that apply.	Macintosh® II Sales Information Kit?
Outside Sales	☐ In-store Demonstration
Seminars Customer Orientation	☐ Sales Training ☐ Other

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Macintosh II Business Demonstration Instructions



Macintosh II Business Demonstration Instructions

Macintosh II Business Demonstration Instructions

Demonstration Installation Procedure

Font Installation

Video Settings

Running the Demonstration Install all files included in the five-disk demo package into a folder on the Macintosh® II system's hard disk. The VideoWorks II Driver and its manual must be in the same folder as the included animation strips. (Note: The HyperCard® application need not be located in this folder.)

To run this demonstration, you must have the Palatino® font installed in your System file—in 10-, 12-, 14-, 18-, and 24-point sizes. These typefaces are included in the demo package files and must be installed using the Font/DA Mover.

To run this demonstration, the color setting in the Control Panel must be set for 256 colors. To do this requires the Video Card Expansion Kit (Part No. M0213).

This demo consists of several sections, each of which includes a short animation. To get to the animation strips, you must go to a card in the Mac II HyperCard stack. You can hide demo selections or applications by clicking on their icons while holding down the Option key. Clicking again with the Option key held down will bring them back into view.

- Clicking on the Introduction to Macintosh II button will launch a short video presentation and then take you to a card containing a bullet chart. Clicking on each title in this chart will launch an associated animation. The standard HyperCard Return button will return you to the opening card of this stack.
- To access applications for each of the three major categories desktop publications, desktop presentations, and business solutions—hold down the Command key and click on the appropriate button.
- To open a data file (for example, Microsoft Excel data), click on the appropriate application's icon. When you quit the application, you will be returned to the Application card, ready to make another selection.

Macintosh II Business Demonstration Instructions

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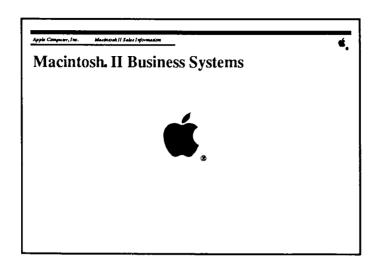
- To return to the Demo card, click on the Return arrow.
- To change an icon on the application cards or install a new one, hold down the Shift key and click on the icon, then follow the instructions below:
 - Type in the application's exact name, then click Icon to see a selection of icons. Click on the application's icon, then click OK. Click OK again, then select the hand-shaped cursor from the Tools menu.
 - If you can't find the icon you need, click Cancel. Then select the hand-shaped cursor from the Tools menu, copy the resource into the Mac II Demo stack, click on the ResCopy button, and repeat the procedure above.

Troubleshooting Tips and Notes

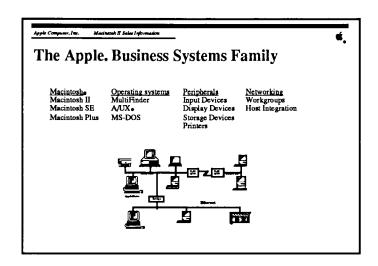
This demonstration was designed to run on a Macintosh II computer with at least 2 megabytes of RAM, so out-of-memory errors should arise only in systems with less RAM. If you are having trouble with such errors, try the following:

- Use as small a System file as possible, with only the fonts and desk accessories as you need to operate efficiently.
- Make sure that RAM cache is set to Off.
- Don't use the MultiFinderTM operating system.
- Disable any network software (AppleShare®, TOPS, or other).

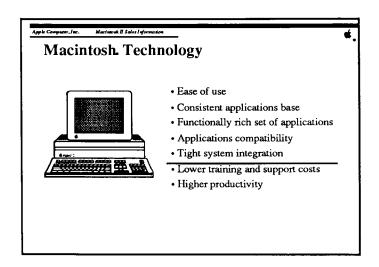
Macintosh II Business Systems Presentation



This presentation provides an overview of Apple's business product family, with special emphasis on the Macintosh® II computer. You'll see how Apple delivers a wide range of products to meet the needs of businesses of all types, and you'll gain an understanding of Apple's future strategies.



The Apple® business systems family is a complete line of products that provide the basis for the software and productivity enhancements available in the Macintosh environment. These hardware and software products fit into four key categories: CPUs, operating systems, peripherals, and networking. In this presentation we'll describe the products in these categories in detail.



Macintosh is more than just a personal computer—it embodies a philosophy of how humans work with and interact with information.

Macintosh technology provides ease of use through a consistent, intuitive user interface. All applications use this interface, so Macintosh users quickly understand the basics of all Macintosh applications. This consistency is found in no other business computing environment.

Apple works very closely with its family of third-party software developers, and over the past four years has developed an applications base that is not only consistent, but is also functionally rich in the features that business users have been demanding. The Macintosh software base, consisting of well over four thousand programs, provides unparalleled richness and diversity.

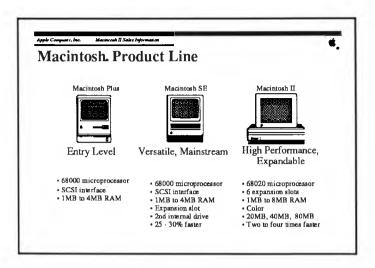
Another important aspect of a highly productive set of software applications is compatibility across all computers in the family—both now and in the future. Macintosh business applications are upwardly compatible, from the Macintosh Plus to the Macintosh II; and, perhaps more important, they will be compatible with future operating systems and CPUs. This is an important benefit to businesses: Once a business has standardized on a set of applications, it needs to know that they will continue to be productive in the future, no matter what new technology reaches the market.

Macintosh is also designed with systems integration in mind, so configuring any setup—from a stand-alone system to a large workgroup—is simple. A common set of ports, adherence to standards such as SCSI, and built-in networking provide the basis for unparalleled systems integration.

All these points add up to lower training and support costs and significant productivity gains.

Macintosh. Productivity Gains Five Year Cost Savings Over a five-year period, using a Macintosh vs. an MS-DOS machine can save \$5600 (or 28%) in training and support costs. Source: Gartner Group Productivity Increases Using a Macintosh can increase productivity up to 31%. Source: Peat Marwick, Macintosh Benefits Study, June 1987 Training and Support Cost Savings MIS managers in Fortune 1000 companies reported that the average training time and costs, as well as support time, associated with Macintosh were LESS THAN HALF those reported for MS-DOS systems. Source: Diagnostic Research, Inc. 1988. Study of Fortune 1000 MIS Managers.

Studies by leading research companies continue to confirm that using a Macintosh in business can significantly increase productivity and reduce training and support costs. The statistics shown here are taken from three recent studies that provide very compelling evidence of the advantage of Macintosh for businesses.

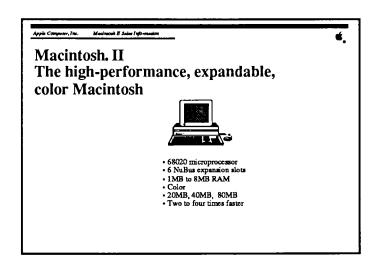


Apple now has a complete family of Macintosh business computers, from the entry-level Macintosh Plus to the high-performance Macintosh II.

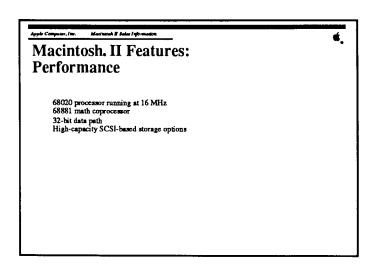
The Macintosh Plus provides all the benefits of a Macintosh at a low price. It is ideal for the first-time buyer, for small or home businesses, and for departments on a limited budget.

The Macintosh SE is a step up from the Macintosh Plus in power and expandability. It is 25 to 30 percent faster than the Macintosh Plus, and has an expansion slot that brings new capabilities to the compact Macintosh family by allowing users to add expansion cards such as communications and accelerator boards. The Macintosh SE is also available with a 20-megabyte internal hard disk.

The Macintosh II...



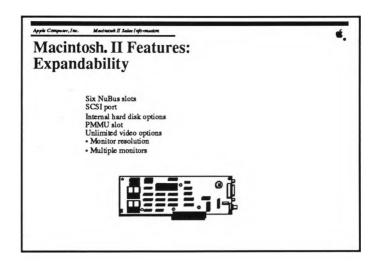
...is the high-performance, expandable, color Macintosh. To fully understand the significant performance advantages that the Macintosh II offers, let's look at each of these benefits in detail.



The Macintosh II provides the power to accomplish even the most demanding of business tasks. Several components contribute to this power.

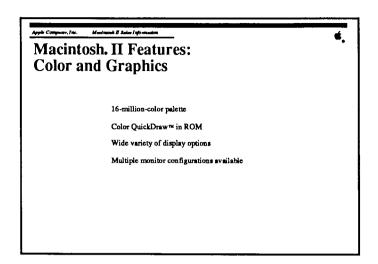
- The Motorola 68020 processor allows you to launch and run applications and execute instructions up to four times faster than on Apple's 68000-based computers. The clock speed of the 68020 is twice that of the 68000 (16 vs. 8 MHz), and the data bus is twice as wide (32-bit vs. 16-bit), resulting in a fourfold increase in processing speed.
- In addition, every Macintosh II contains the Motorola 68881 floating-point coprocessor, which performs arithmetic calculations up to 200 times faster than previous systems.
- In order to take full advantage of its 32-bit processor, the Macintosh II has a 32-bit address bus, which allows for a total addressable space of 4 gigabytes.

To fully benefit from the enhanced performance of the 68020 processor, you must be able to access data as fast as you can process it. The Macintosh II offers a variety of high-capacity SCSI-based storage options that give you greater than 1-megabyte-per-second access to stored data and applications.



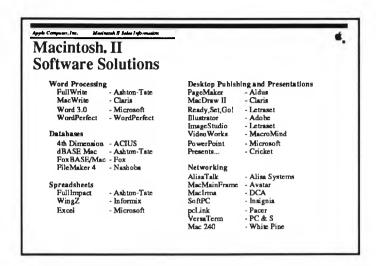
The Macintosh II was designed with nearly unlimited expandability in mind. This assures users that they will be able to add features as their needs grow, and that new technologies will be easily incorporated into the system. The key expansion features of the Macintosh II are the following.

- The six NuBus[™] slots provide ample flexibility for expansion as requirements change and new technology becomes available. Geographical addressing allows each NuBus card to be self-configuring. This means that any card can be installed in any slot without setting DIP switches or priorities.
- As more powerful and sophisticated software is developed, the RAM required to run them increases. The Macintosh II allows you to expand on-board memory from 1 megabyte to 8 megabytes. By installing NuBus cards, you can expand the memory beyond 1 gigabyte.
- SCSI ports allow you to expand your system with commonly used peripherals such as mass-storage devices, printers, and scanners—without using expansion slots. Up to seven SCSI devices can be daisy-chained together from one port.
- Internal hard disk drive options give you additional storage without using additional desk space.
- The optional 68851 PMMU chip upgrade provides the memory management necessary to run multitasking operating systems such as A/UX®, Apple's implementation of AT&T's UNIX®.
- Virtually unlimited video options allow you to select the display that best meets your needs.



The Macintosh II breaks new ground for color and graphics on a personal computer. Users can get stunningly realistic graphics on the screen in very high resolution, using a palette of over 16 million colors.

A wide variety of monitor options is available. Up to two full pages of color graphics can be displayed simultaneously. And, because of the unique design of the Macintosh II, users can access multiple monitors simultaneously.

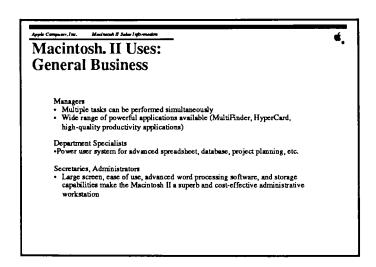


A platform as powerful as the Macintosh II provides a superior base for great business software. Here is just a sampling of the applications—available today—that take advantage of the unique features of the Macintosh II, including speed, color, connectivity, and enhanced memory.

As you can see, the Macintosh II offers a large base of solutions to meet your business needs—and many more solutions are currently being developed.

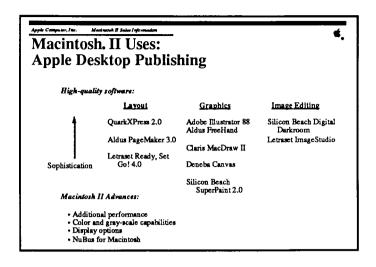
Use of these advanced, second-generation solutions, combined with Apple's consistent interface and the MultiFinder™ multitasking environment, will lead to significant productivity gains in every area of your business.

This wide range of superior business solutions and the unique advantages of the Macintosh II make it the mainstream computer that can best meet the needs of business users.



The Macintosh II can meet both the general and the special needs of businesses.

- Department managers must have the ability to run multiple applications simultaneously, and they require all types of productivity applications—from information management to word processing to desktop organizers. These managers will find the Macintosh II particularly suited to their needs.
- Department specialists, who consistently perform a few key tasks, will find that the Macintosh II offers all the power and expandability to meet the most rigorous needs of any spreadsheet or database user.
- Another key use of a Macintosh II is as a secretarial workstation. Secretaries and office administrators can take advantage of the advanced word processing applications available on the Macintosh II, such as WordPerfect, Microsoft Word 3.0, and FullWrite Professional. Combine this software with the ease of use, variety of type styles and sizes, and storage options of the Macintosh and the high-quality output of the LaserWriter® printer family, and you have an ideal word processing system that is priced competitively with dedicated word processors.



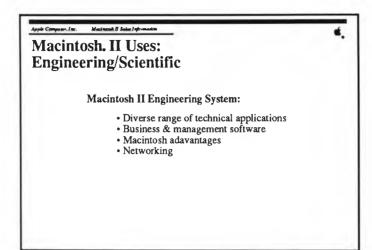
The combination of a Macintosh computer and a LaserWriter II printer is fast becoming a standard in desktop publishing.

Why? Because this system offers:

- The most advanced on-screen graphics available (WYSIWYG).
- Fast performance—even with complex pages.
- Mature software applications.
- Widest range of DTP software available for any system.
- Ability to import text and graphics from business productivity applications.
- Consistency across applications (key because desktop publishing generally requires the use of several applications).
- Choice of Macintosh computers and printers, so your system can grow with your needs.
- Built-in networking for flexible workgroup publishing solutions.
- MultiFinder, for using several programs at once (word processing, graphics, image editing, and layout).

The Macintosh II brings new capabilities to Apple Desktop Publishing in the following ways:

- Color and gray-scale display capabilities significantly increase the graphic quality of the output.
- Monitor options allow the choice of the appropriate monitor for even the most advanced users—up to two full pages can be displayed.
- The speed of the Macintosh II makes it the machine of choice for advanced desktop publishing professionals who work with complex page layouts, long documents, or sophisticated graphics.
- NuBus, for a wide range of peripherals—video digitizers, film recorders, color printers, and so on.



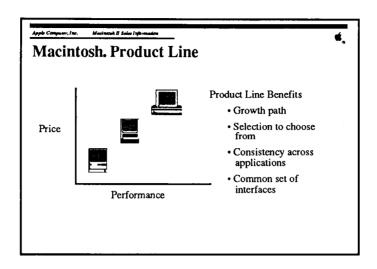
The diverse range of technical applications offered on the Macintosh II includes twoand three-dimensional design, drafting, stress and vibration analysis, structural analysis, schematic capture and circuit board design, software development, and laboratory and statistical analysis.

However, the Macintosh II engineering system goes beyond pure design and analysis to help with the other business tasks that occupy a large part of a technical professional's time. The Macintosh II offers various applications to aid you with project management, writing, budgeting, and more.

The Macintosh II technical workstation also ensures that for all the applications you use, technical as well as business, you have the same consistent, graphics-based interface, allowing you to get quickly up to speed on every application.

Finally, the Macintosh II system, with its built-in networking capability, enables you to work efficiently with a team by communicating and sharing information easily. In fact, not only can you connect to other Macintosh users, but you can also integrate your Macintosh with IBM PCs and compatibles, engineering workstations, minicomputers, and mainframes.

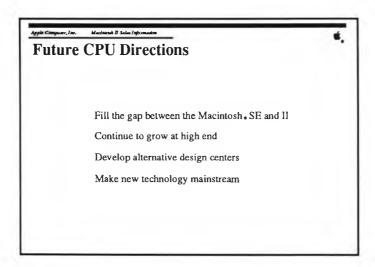
In summary, the Macintosh II technical workstation is an excellent tool to meet your technical and business computing needs.



Of course, the Macintosh II is just one member of a family of Macintosh computers designed to meet the various needs of all employees in an organization. Having a choice of systems provides a growth path as employees' needs increase or change, and allows a range of computer capabilities both across and within departments.

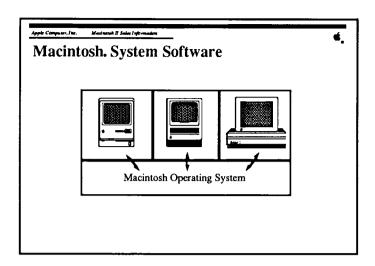
Maintaining standards across a family of computers is also a very important part of a consistent product line. The Macintosh product line offers two key standards:

- A consistent, upwardly compatible set of software applications, so that once a department invests in an application, it does not require new software—and additional training—when it adds more powerful computers.
- A common set of interfaces, so that nearly any peripheral or communications device that is used currently can be used with any other Macintosh—including future systems.



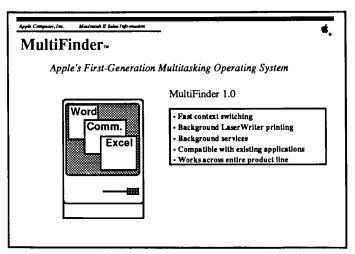
Apple is committed to developing the Macintosh product line in four key areas:

- There is a need both for lower-end Macintosh II and for higher-end Macintosh SE computers. Apple is actively developing products in these areas.
- Businesses have a nearly insatiable need for more power and performance. As new technologies become available, Macintosh II will continue to grow at the high end.
- The Macintosh family now consists of compact (SE, Plus) and expandable (II) design centers. Apple is currently working on alternative design centers that will be introduced when key new technologies become available. These new products will be fully functional members of the Macintosh family.
- Just as the mouse and pull-down menus were revolutionary technologies a few years ago, many new technologies are becoming available that will be incorporated into Macintosh as standard features. Areas such as sound, speech, video, multimedia, and artificial intelligence are key to the future plans for Macintosh.



The three Macintosh computers rest solidly on the Macintosh operating system, as will all future versions. It is the System software, combined with the graphics foundation of the Macintosh ROM, that gives Macintosh its unique character and competitive leadership.

The newest addition to the Macintosh operating system is MultiFinder...



...Apple's first-generation multitasking operating system.

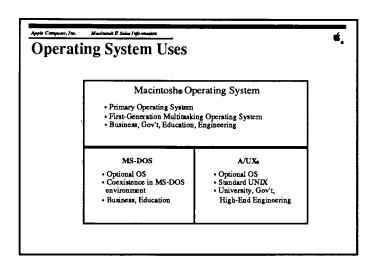
MultiFinder offers fast context switching, allowing you to simply point to the appropriate window to switch between applications. And, just as the ability to move data between applications is a basic feature of the Macintosh, under MultiFinder you can easily cut and paste without quitting and rebooting applications.

MultiFinder also offers background services, allowing you to print documents or send and receive data while you are working with another program.

Virtually all Macintosh applications are compatible with MultiFinder, so it is extremely easy to move from a single-tasking to a multitasking world. This preserves any investment businesses may have in software and training, and is another example of the way Apple introduces new technology without placing major training or financial burdens on Macintosh customers.

Although MultiFinder works best on a machine such as the Macintosh II, which offers a larger screen, a key feature of the program is that it works across the current Macintosh product line. (At least 2 megabytes of memory is recommended to use the program effectively.)

MultiFinder is shipped free with every Macintosh system.



Although the proprietary Macintosh operating system is the primary choice for most Macintosh users, business customers asked Apple to provide other standards. Macintosh II users now have access to the three business operating system standards—Macintosh, MS-DOS, and UNIX. The Macintosh II is the only system that currently offers this choice, giving users unparalleled flexibility in selecting software applications.

MS-DOS Applications Integration on the Macintosh. II

SoftPC from Insignia Solutions, Inc.

- MS-DOS software emulation in a window under MultiFinder
- · Cut and paste between MS-DOS applications and Macintosh applications via the Clipboard

 Runs all standard CGA-compatible MS-DOS applications
- XT speed

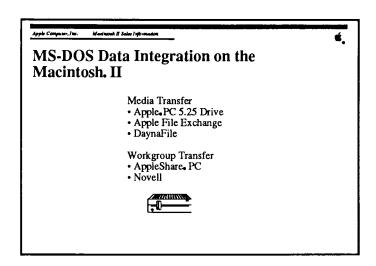
Mac286 Board (AST)

- An 80286-based MS-DOS computer running in a Macintosh II NuBus slot
- · Runs all standard MS-DOS applications

Macintosh II users currently have two options for running MS-DOS. SoftPC from Insignia is a software emulation program that runs in a window under MultiFinder and allows cut and paste between the two operating systems via the Macintosh Clipboard. It supports CGA-compatible applications and provides IBM PC XT processing speed.

AST offers a hardware solution to running MS-DOS—an 80286 coprocessor board that fits in a NuBus slot. This approach provides IBM PC AT processing speed and background operation of the MS-DOS window.

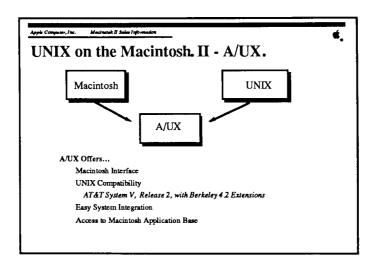
Both solutions allow users to run MS-DOS applications that their business may have standardized on or that may only be available in the MS-DOS world.



For users who need to transfer data between MS-DOS and Macintosh environments, there are several effective means to accomplish this.

- First, MS-DOS disks can be read by the Macintosh using an Apple PC 5.25 Drive and Apple File Exchange software, or a DaynaFile drive.
- If the users are part of a workgroup and use both MS-DOS and Macintosh computers, data transfer can be easily accomplished via a file server. This can be done over an AppleTalk® network using the LocalTalk™ PC Card and Apple File Exchange, or over a token ring network using Novell software.

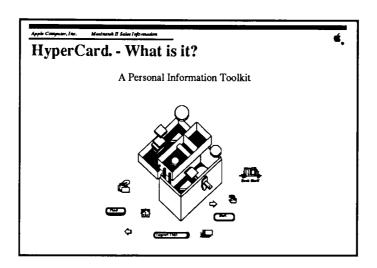
No matter which option they select, businesses of all types now have the ability to preserve their investment in MS-DOS-format data while taking advantage of the many benefits of the Macintosh.



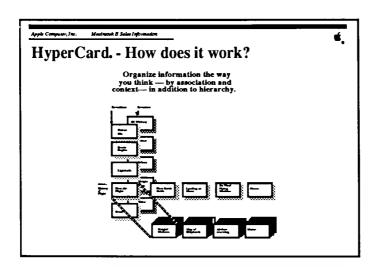
UNIX is taking on increasing significance in many areas of the business world, especially in the scientific and engineering communities. In response to customer demand, Apple offers A/UX, the Macintosh II version of UNIX that gives users the best of both worlds. It incorporates the user interface and graphics capabilities that Macintosh users expect, and it meets the standards of the UNIX environment. A/UX implements AT&T System V, Release 2, with Berkeley 4.2 extensions.

A/UX offers easy systems integration because it adheres to industry standards and offers self-configuring software drivers.

A little-known—but very important—feature of A/UX is that properly written Macintosh-based applications will run without modification under A/UX.

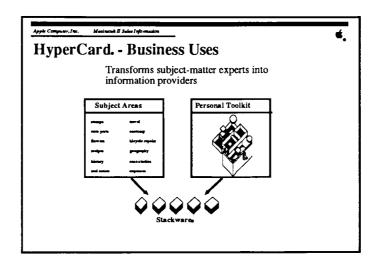


A key extension to Macintosh System software is HyperCard®, a personal information toolkit that combines the information-handling capabilities of a database with tools that allow you to develop, link, and manage information much the way you do in your mind.



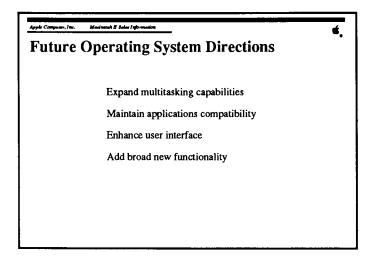
HyperCard allows you to organize information much the way you do in your mind—by association and context. Think about how a conversation runs or how a new idea is developed: The human mind naturally associates a variety of subject matter to develop new ideas and concepts. HyperCard allows you to use the computer to link information in a similar way, so that information that wouldn't normally be associated can now be tied together.

HyperCard presents information on "cards," similar to index cards, that are linked together into "stacks" that can be easily manipulated and developed by the user. No longer must departments hire programmers to customize software for various applications.



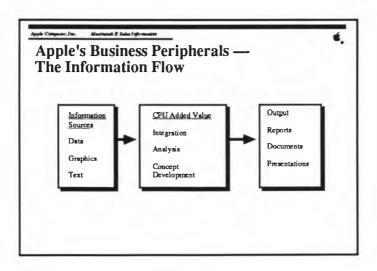
HyperCard can return the ability to manage and distribute information to the experts who work with it most closely—the departmental specialists who are responsible for it. Through Stackware®, corporations now have a new and effective means of distributing information—both within the organization and outside, to their customers. When combined with another new technology—CD-ROM—HyperCard will have a major impact on the information-distribution business.

HyperCard is also a valuable tool for use in desktop presentations or as a personal desktop organizer or database.



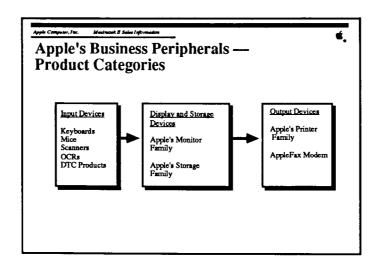
Maintaining operating systems leadership is a key strategy for Apple. Areas of emphasis include:

- Adding greater multitasking capabilities, such as true background processing, to MultiFinder, while maintaining applications compatibility across existing and future CPUs.
- Continuing to enhance the user interface in such areas as sound, color, macros, search capabilities, and additional features of the Hierarchical Filing System.
- Providing broad new functionality in such areas as database standards, communications, and artificial intelligence.



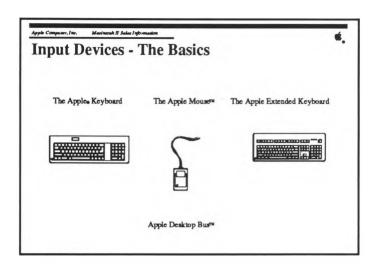
Just as the operating systems are tightly integrated into the Macintosh CPUs, Apple peripherals are also designed with the special requirements of the Macintosh in mind.

This design takes into account the ways in which people need to work with information. Users receive information in various forms: text, graphics, and numerical data. They need peripherals that enable them to bring this information into the computer and to integrate the information, analyze it, and develop new concepts with it. Once new files have been developed, users need to store them and to communicate their contents to the outside world. As computers have become more sophisticated, users' requirements for professional-quality reports, documents, and presentations have dramatically increased.



Apple meets these needs with a variety of peripherals.

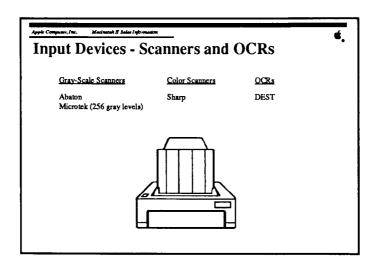
Apple and third parties offer input devices such as keyboards, mice and scanners; a family of display and storage devices; and high-quality output devices such as printers and the AppleFaxTM Modem.



The basic input devices for the Macintosh are mice and keyboards. Although the mouse was viewed as a novelty item just four years ago, it is now accepted in the business world as a key component of a graphics-based, icon-oriented interface.

To meet the various needs of businesses, Apple offers two keyboard options, the standard Apple Keyboard (with cursor keys and numeric keypad) and the Apple Extended Keyboard (which also includes 15 function keys). The Extended Keyboard has value for users with MS-DOS or host connectivity needs.

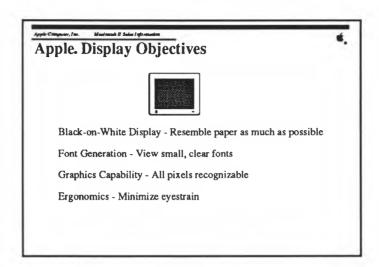
The Macintosh SE and Macintosh II, as well as future Macintosh systems, support the Apple Desktop Bus™ (ADB), a standard means of entering information into the computer. With this standard, third parties can develop input devices that all Macintosh software will automatically understand and work with. Up to 16 ADB devices can be "daisy-chained" together to enter information into the Macintosh.



The increasing desire for high-quality graphics has led to increased demands for new input devices. Third parties have responded with a variety of innovative, high-quality peripherals.

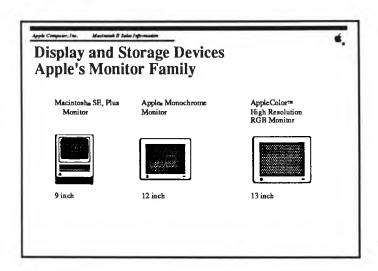
There are several high-quality gray-scale scanners on the market that meet professionals' requirements, especially in the area of desktop publishing. These scanners, which operate much as a copier works, can import graphics quickly and easily. They provide up to 256 levels of the gray scale, making the images extremely accurate. Abaton and Microtek are two companies that produce these peripherals.

Additionally, new color scanners are becoming available that are especially valuable in the color environment of the Macintosh II. Sharp is currently shipping scanners that provide color images in up to 16 shades.



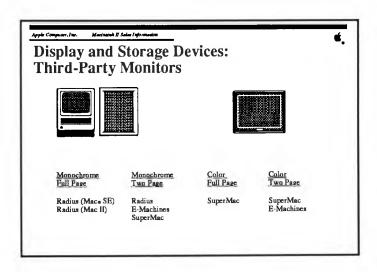
The display of the Macintosh is critical to the effectiveness of the entire system. Apple monitors are designed meticulously, to exacting standards, in order to meet these needs. Four areas of concentration are:

- The ability of the screen to closely resemble paper (black text on a white display). This is the most natural for your eye to adapt to.
- Advanced document processing and desktop publishing require the ability to display small, clear fonts. The pixels on Apple monitors are designed to meet these needs.
- Because the Macintosh is a graphics-based system, all pixels on the screen must be displayable and recognizable. Many competitive monitors are not designed for graphics.
- Macintosh users spend, on average, more than twice the time in front of their computers that MS-DOS users do. The Macintosh display is designed to minimize eyestrain. The flat, black-on-white display, tightly focused pixels, and clear, crisp graphics of the Macintosh all add up to the improved ergonomics that make working at a Macintosh more of a pleasure.

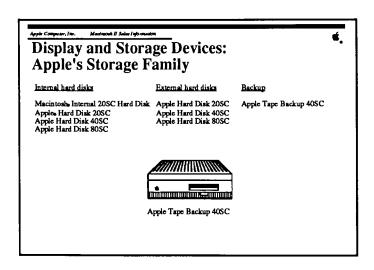


Apple's current monitor family consists of the following:

- The 9-inch black-and-white display for the Macintosh Plus and SE.
- The 12-inch Apple High-Resolution Monochrome Monitor for the Macintosh II. This monitor, when combined with the Macintosh II Video Card and Expansion Kit, can display up to 256 levels of gray, with a resolution of 640 by 400 pixels. It is ideal for basic business productivity applications such as spreadsheets and document processors.
- The 13-inch AppleColor™ High-Resolution RGB Monitor for the Macintosh II. This monitor, which also requires the video card, can display up to 256 colors from a palette of over 16 million colors. It truly brings out the advanced capabilities of the Macintosh II, and is the monitor of choice for a wide range of users, from graphics professionals to managers who need to create color presentations and reports.



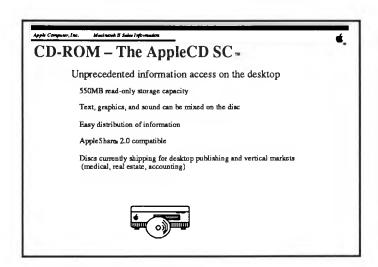
To meet the various needs of business users, there are many thirdparty options available on the market. These range from full-page displays for Macintosh SE and Plus users to two-page color monitors that meet the needs of the most advanced desktop publishing or engineering workstation users.



Fast, effective, and secure storage of documents is a critical need among business users.

Apple offers a complete line of internal and external hard disk drives for the Macintosh family, ranging from 20 to 80 megabytes. Higher-capacity drives are available from a variety of third-party developers.

To ensure data safety and security, Apple also offers the Apple Tape Backup 40SC, which uses highly reliable 1/4-inch magnetic cassette tapes to back up hard disks of any size, either by file or by volume. All businesses that work with large amounts of information should consider adding a tape backup system to every Macintosh configuration.



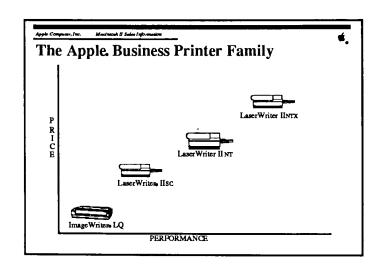
The newest member of the Apple storage family is the AppleCD SCTM CD-ROM drive. This revolutionary technology, similar to that of its phenomenally successful audio CD cousin, allows storage of up to 550 megabytes in read-only form. This information can be of any type—text, graphics, and sound—providing the basis for multimedia uses.

CD-ROM technology provides a revolutionary new way to archive and distribute information. Previously it had been nearly impossible to safely store large amounts of digital information, and even more difficult to distribute it. CD-ROM supersedes older technologies and opens new avenues for information delivery.

The AppleCD SC is compatible with the AppleShare® File Server, so it can be used in a workgroup setting, lowering the cost per user.

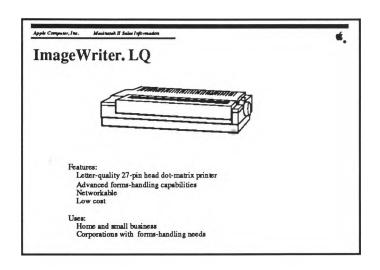
CD solutions are becoming widely available for general business use in such areas as desktop publishing and in many vertical markets, including medicine, real estate, and accounting. Additionally, large information providers are beginning to adopt the technology. For example, the U.S. Government has recently released census figures and other information on compact disc.

Corporations of all types can now master their own CDs for a cost as low as \$2,500, giving them a competitive advantage.



High-quality output is a hallmark of the Macintosh environment. To meet users' needs in this area, Apple offers a complete line of business printers.

The business printer family starts with the low-cost ImageWriter® LQ, a letter-quality dot-matrix printer, and progresses to the three new LaserWriter printers—the IISC, IINT, and IINTX. These printers are designed with different customer needs in mind.



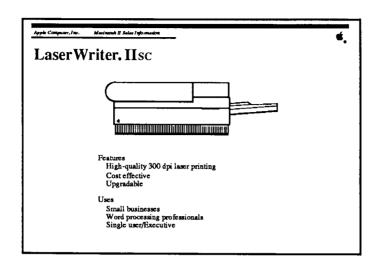
The Apple ImageWriter LQ is designed for users who need a versatile dot-matrix printer to handle a broad range of office printing tasks. Besides producing letter-quality text and graphics, the ImageWriter LQ offers superior paper handling, color, and networking capabilities.

With a 27-pin print head, the ImageWriter has 216-dot-per-inch resolution, close to the 300 dpi produced by the LaserWriter.

Exceptionally flexible paper-handling features allow you to effortlessly print multipart forms, heavy-gauge papers, envelopes, and labels, and up to 15-inch paper widths.

The Apple ImageWriter LQ can be shared with up to 31 users via the AppleTalk network.

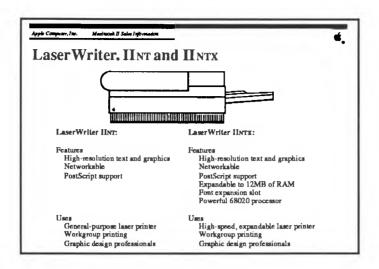
The ImageWriter LQ is designed for any task—from word processing and business graphics to accounting and artwork. And it is ideal for small businesses that have a wide range of printing needs yet cannot afford a top-of-the-line laser printer, or for larger businesses that require flexible forms handling.



The Apple LaserWriter IISC brings the individual Macintosh user full-page, near-typeset-quality text and graphics at an affordable price.

Because the LaserWriter IISC uses the same high-quality platform, including the Canon engine, as the other Apple LaserWriter II printers, it can be upgraded to either the LaserWriter IINT or IINTX.

The LaserWriter IISC is the best choice for small or home businesses, word processing professionals, and individual users. These users often need a one-printer solution that offers laser-quality text and graphics, an upgrade path, and an affordable price.

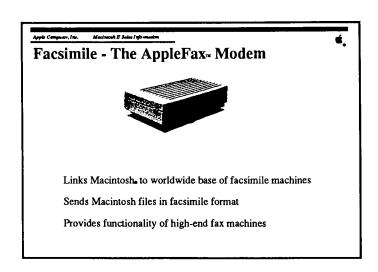


The Apple LaserWriter IINT and IINTX are Apple's high-end laser printers for individuals and workgroups. They offer full-page, high-resolution (300 dpi) text and graphics.

Both can be networked over AppleTalk to support workgroup printing.

And both support the PostScript® page description language, which allows them to produce sophisticated text and graphics and also to work with non-Apple systems.

The powerful IINTX offers high-speed printing as well as expansion capabilities. The 68020 processor enables it to print three to four times faster than previous LaserWriter models, an important feature for those who work with complex page layouts. The IINTX also has a SCSI expansion port that allows the user to connect a hard disk drive for fast downloading of fonts; RAM memory can be expanded to facilitate this. The IINTX includes a font expansion slot for storing additional high-speed, ROM-resident fonts. These features make the IINTX ideal for high-end desktop publishing and advanced graphics uses.

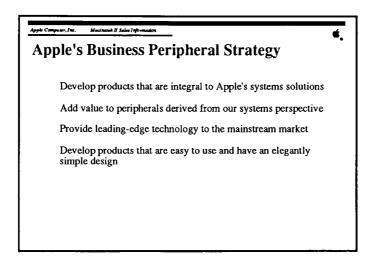


Not all output, however, needs to be at the same location as the user. With Apple's new AppleFax Modem, all the benefits of a high-end facsimile machine are now available to Macintosh users.

The facsimile market in the United States is exploding because fax machines provide instantaneous transmission of graphics and text for the cost of a phone call.

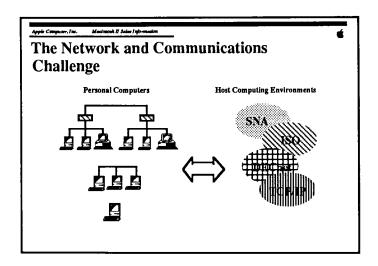
The AppleFax Modem provides all of these benefits plus extra features unique to the Macintosh. Because the imaging of the document is driven by the Macintosh, text and graphics sent by the AppleFax Modem are of much higher quality than most faxed documents. The advanced software makes sending or receiving a transmission as easy as printing to a LaserWriter, and transmissions can be sent to multiple locations or timed to be sent during nonpeak hours to save money.

Key target customers are companies with multiple locations, sales organizations, service companies that deal with out-of-town clients, and anyone in the publishing business. They all need quick, clean hard-copy delivery to single or multiple locations.



Four priorities guide the development of all Apple peripherals.

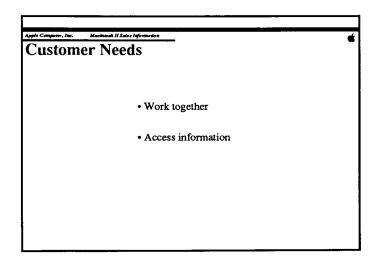
- They must be an extension to Apple's systems solutions for business customers.
- Apple strives to add value to peripherals, especially in the areas
 of graphics and ease of use, that meet the demands of the
 Macintosh systems environment.
- By offering revolutionary capabilities to the market, such as CD-ROM and the fax modem, Apple strives to continue to make new technology available to mainstream users.
- Above all, Apple peripherals need to be easy to use. Apple strives for "elegant simplicity" when designing peripherals that best meet the needs of users. The best peripherals often go unnoticed—they just continue to do their job with quality and consistency.



Businesses today must work within a multiplicity of computing environments. And they're asking a number of questions. "What will Apple connect to—and why? Which of these many environments will be selected, and how will Apple add value to them?"

There is not—and there will not—be a single networking environment. There will be several.

Apple's approach is to target multiple environments and to provide connectivity solutions that add value by meeting customers' communications needs.



Developing a communications strategy requires that we first understand our customers' needs.

At the most fundamental level, people need systems that enable them to work together more effectively and productively, and they need systems that enable them to access and use information from multiple sources and system types.

Apple Computer, Inc. Macintoth II Sales Information

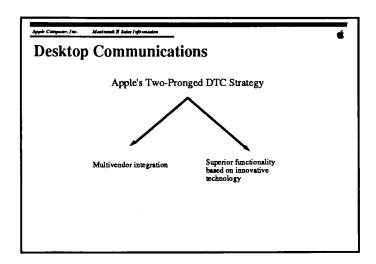
Apple's Desktop Communications Vision

Extend the Macintosh, concept to

- · Productivity via workgroup computing
- Transparent data integration across vendor lines

Apple's vision is to take the consistent, intuitive, graphics-based interface of the Macintosh computer and apply its attributes to communications. This will provide the next leap in business productivity. The two components of this vision are:

- People working together and sharing information through workgroup computing, and
- People transparently accessing data from anywhere within the customer's environment, regardless of the originating system, the data format, or the method of delivery.

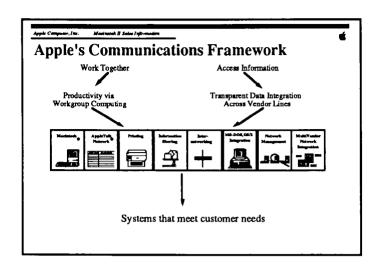


To meet this vision Apple has developed a simple, two-pronged strategy.

First, Apple will provide unique and superior value-added communications solutions based on innovative technology—the same approach Apple brings to the development of all its products. However, by extending this basic philosophy of innovation into the communications arena, Apple will improve people's ability to work in groups just as Macintosh has improved the way people work individually.

And second, even as Apple provides unique value, the products must fit into the customer's computing environment, ranging from standards in the networking arena to host integration with all the major vendors.

These two prongs are not mutually exclusive. In fact, most of these products combine both approaches.

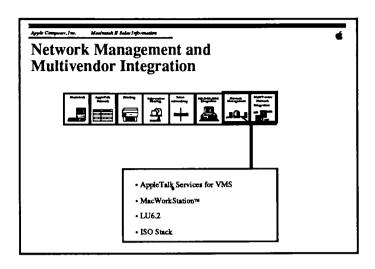


The foundation for Apple's communications strategies is the Apple Communications Framework, a coherent technology platform for Apple's networking and communications products that meets these three customer requirements:

- A wide range of products. The Framework is a stable, expandable environment for our application developers.
- Financial security. The Framework is a coherent, evolving system that guarantees the customer's investment.
- Value. Through the Communications Framework, Apple provides unique functionality as well as integration into the customer's environment.

Following this slide from left to right, the building blocks of this framework are the Macintosh personal computer, the AppleTalk network system, printing technologies, information sharing based on the AppleShare file server, internetworking, and integration of MS-DOS PCs. (Each of these is discussed in detail in the Framework video, included in the DTC Systems Sales Kit that dealers received earlier this year.)

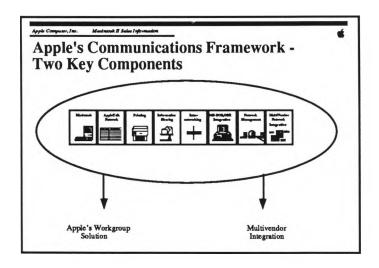
In addition, there are two very important building blocks that we'll discuss in detail.



These building blocks are network management and integration into multivendor environments.

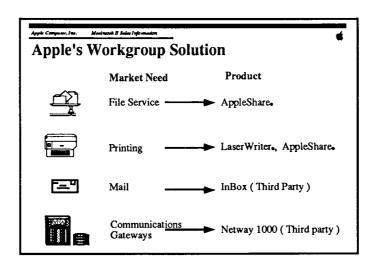
Network management refers to our participation in large-scale mainframe network management systems, such as IBM's NetView, and also to the management of and diagnostics for multiple, interconnected local workgroups.

Multivendor integration refers to Apple's strategy for connecting Macintosh computers and adding value in business settings in which multiple technologies must be seamlessly interconnected. As always, the focus must remain upon the individual, ensuring that the user can effectively use company information, no matter where it resides.



There are two key components to Apple's Communications Framework, and they are implemented through two major product lines: first, Apple's workgroup products, which are primarily built on AppleTalk technology; and second, integration products, which connect Macintosh and AppleTalk to other major communications standards such as Ethernet or LU 6.2.

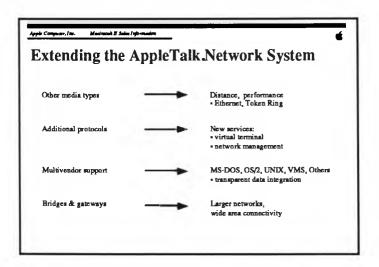
Let's take a look at how these goals are implemented. First we'll examine our workgroup strategy, and then we'll discuss integration.



The primary strategy in the workgroup network area is to provide a complete, innovative set of services both to the end user and to the applications developer. Four key areas of concentration are file service, printing, mail, and communications gateways.

The best way to attract new software development for this strategic platform is to establish a solid, well-supported, and well-documented standard service environment.

For Apple's workgroup solution, these standard protocols are defined primarily by AppleShare, which is the basis for high-level multiuser applications and network services such as calendaring, databases, and a new generation of workgroup applications that enable collaborative work.

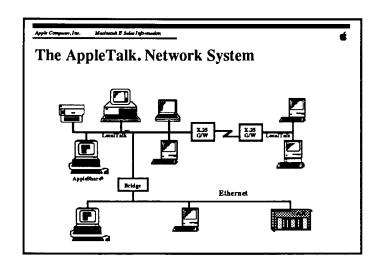


As the needs of businesses evolve, Apple will support larger AppleTalk workgroups that are implemented over longer distances. Users will have an increasingly wide choice of cabling systems, including the twisted-pair and Ethernet systems available now, and others, such as Token Ring, that will soon be available.

The infrastructure that underlies the services is the AppleTalk network system. By this we mean not the cables but the full set of network protocols above the cables.

Apple will continually add new functions and services such as network management and diagnostics.

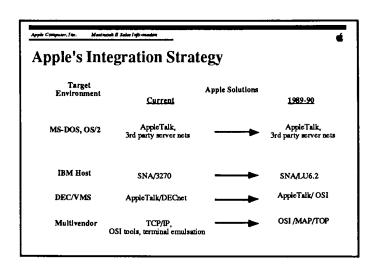
Many customers have multiple types of computers that must be supported. AppleTalk already supports MS-DOS, UNIX, and DECTM VMSTM, and we will add support for more operating systems in the future.



Apple's goal is to evolve AppleTalk as the most functional open network available, one that accommodates multiple vendors and enables customers to choose their own cabling systems, while supporting the unique user functions delivered by Apple's network services.

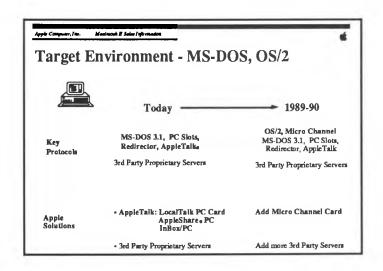
The network shown here is now available, including AppleShare support for MS-DOS PCs, Apple II file and print service, and gateways between remote networks based on the industry-standard X.25 communications gateway protocol.

With this system, a customer can share information and resources between people with different computers and across multiple locations.



Apple has targeted four major environments: MS-DOS, DEC, IBM, and multivendor integration.

- There are more than 8 million MS-DOS PCs installed, and the number is growing rapidly. We must be able to integrate them into our solutions and connect to their environment.
- Apple has made DEC a priority for several reasons. It is the second-largest host environment. It is a solid technical platform for Macintosh solutions that are in place today. And customers who have invested in DEC technology have already shown a willingness to buy other than IBM solutions. Finally, DEC and Apple have similar strategic markets in universities and technical corporations. Today there are already 100,000 to 200,000 Macintosh computers near DEC VAX minicomputers.
- IBM's SNA mainframe environment is the computer industry's standard environment, which makes it a critical integration area for Apple's customers.
- Last, there are the many systems that don't fall under IBM's umbrella but that use alternative industry-standard networking protocols such as TCP/IP or OSI. Apple is also actively working to integrate into these environments.



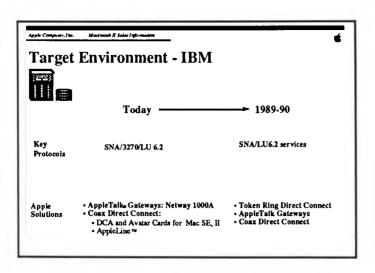
Currently there are over 8 million MS-DOS PCs being used in business. Most are not yet connected in LANs. For customers who already have MS-DOS PCs, Apple's best vehicle for integration is AppleTalk using the LocalTalk PC Card, AppleShare PC, and related services such as the AppleShare Print Server, Apple File Exchange, and InBox/PC.

AppleTalk is the best answer because it implements powerful network services, ease of use, and flexibility, and it does so in a workgroup that is designed to support the Macintosh interface and to handle files from both Macintosh and MS-DOS systems.

To ensure MS-DOS file and application compatibility with AppleTalk, Apple has implemented the standard MS-DOS network interfaces in the LocalTalk PC Card and AppleShare PC. These network interfaces are MS-DOS 3.1 and the Microsoft Redirector.

As OS/2 becomes stable and available, Apple intends to support it on AppleTalk in the same way MS-DOS is supported.

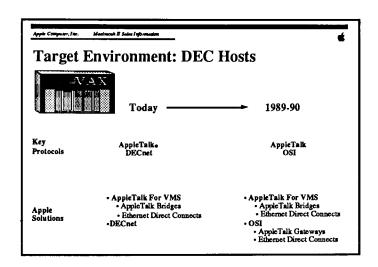
Many businesses already have non-AppleTalk networks installed, and need to integrate Macintosh into their network instead of integrating MS-DOS PCs via AppleTalk. Most of these PC networks are from third parties such as 3Com and Novell. 3Com has shipped products and Novell has announced products that integrate Macintosh with their networks.



To successfully integrate into the IBM mainframe environment, we must recognize that IBM's network strategy is in transition—from 3270 protocol conversion to LU 6.2, IBM's peer-to-peer networking protocol.

Apple now supports 3270 terminal communications with file transfer, both in stand-alone configurations with AppleLine™ or with third-party cards for the Macintosh SE and II, or in AppleTalk workgroup systems using Tri-Data's Netway server.

In January, Apple announced and demonstrated MacAPPC™, Apple's implementation of LU 6.2. Apple is the first "third party" to successfully pass IBM's LU 6.2 interoperability test suite. MacAPPC includes HyperCard APPC™, the vehicle for making HyperCard the front end to LU 6.2. Apple will support a variety of protocols over SDLC and Token Ring, IBM's two major network linking standards.

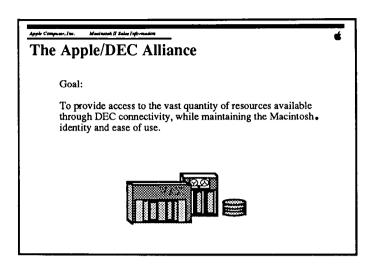


Apple's DEC integration strategy is to provide integrated services such as mail and file service over AppleTalk or DECnet™, depending on the customer's needs.

Apple has implemented the AppleTalk library of protocols under VMS, the primary operating system for VAX minicomputers. The full range of AppleTalk services can be extended to the VAX. This means, for example, that a Macintosh user can transparently access a VAX as a file and print server using AlisaTalk or run a multiuser database on a VAX using Helix VMX.

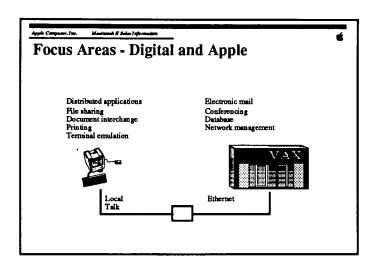
DECnet solutions for the Macintosh are available from third parties.

Apple will provide DECnet solutions when DECnet incorporates OSI protocols.



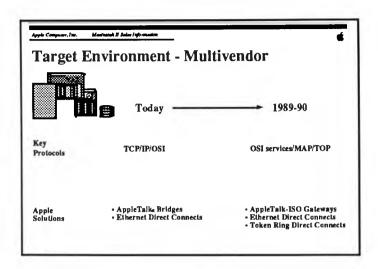
Apple has formed an alliance with Digital Equipment Corporation to develop products that set new standards in meeting the connectivity needs of Macintosh and VAX customers.

The alliance is purely a technical, development agreement, not a sales agreement, and was driven by customers' needs to better integrate the two environments.



The nine key areas of development are listed above. Development efforts by Apple and Digital engineers will focus on using each company's products for what they do best—the Macintosh for its ease of use, data integration, and graphics capabilities, and the VAX for its file service capabilities, processing abilities, and high-speed networking and mail capabilities.

The Digital/Apple agreement is a key focus area where the foundation of the Apple Communications Framework strongly evidences itself.



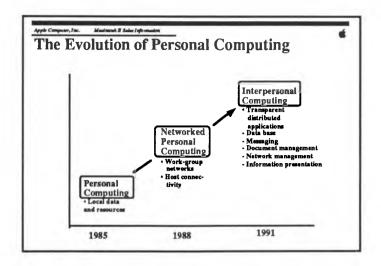
Today multivendor environments that are not based on IBM's SNA are based primarily on TCP/IP, a network protocol set that was originally developed by the Department of Defense. TCP/IP is important to universities, government departments, and technical corporations.

It is also the network protocol most commonly supported by UNIX systems, including Apple's A/UX.

In the long term, however, the OSI protocols will emerge as the dominant multivendor standard. OSI (Open Systems Interconnection) was developed by the International Standards Organization (ISO), which is spearheading the development of a common set of networking protocols for different systems. This is a least-common-denominator protocol set that integrates multiple computers and network systems. It is not to be considered as a replacement for AppleTalk, but as a means of bridging multiple systems and environments.

Apple will provide TCP/IP connectivity while aggressively investing in development projects based on OSI. TCP/IP is supported by Apple via A/UX. Third parties such as Kinetics currently provide additional UNIX support, and other third parties are developing TCP/IP support for the Macintosh operating system.

Apple supports the long-term effort to develop international standards. Apple has three OSI development projects in place today. X400, messaging, and X.25 are under development in Apple's Cupertino Network Systems group. An additional OSI project is underway at Apple Europe, where OSI is more prevalent.

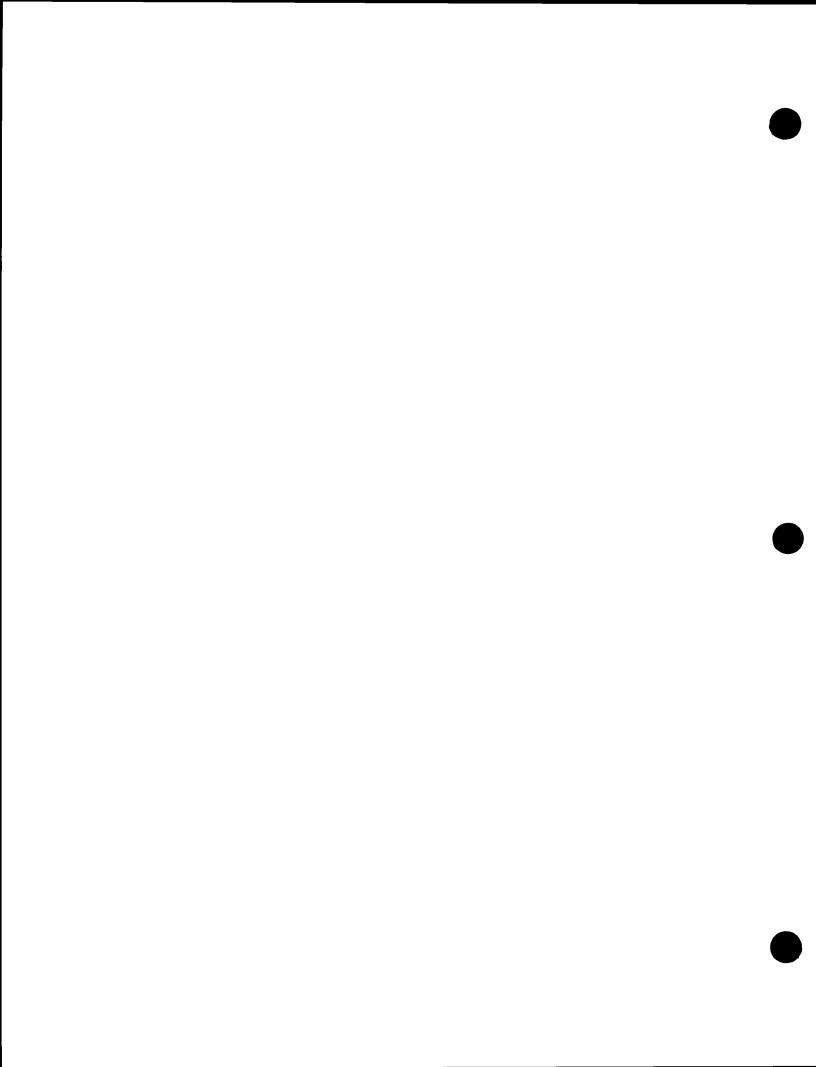


Apple—and the entire computer industry—have come a long way in the past few years. From the era of "one person, one computer", in which personal computer users were achieving productivity increases through spreadsheets and word processors, we are now in the era of networked personal computing, in which these users are receiving the benefits of sharing information and integrating to host environments.

But we need to go a few steps further, toward the goal of interpersonal computing, in which the user has seamless access to information on any type of system. The Macintosh provides the perfect front end because of its consistency, ease of use, and data integration capabilities. It works as a "dashboard"—the user has all the controls at hand, and it doesn't really matter what's under the hood, just so everything works effectively.

Apple is committed to interpersonal computing and is aggressively developing products to make this goal a reality. And as Apple moves in this direction, it will always strive to make the transition as simple as possible so that corporations can reap the benefits without incurring major transitional or retraining costs.

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Apple Computer, Inc.

Macintosh II Sales Information



Macintosh_® II Business Systems



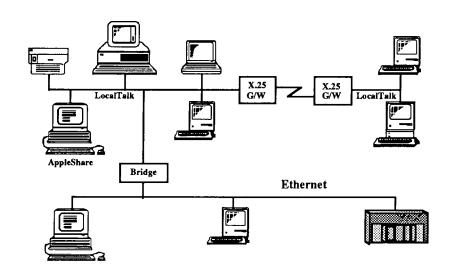


The Apple® Business Systems Family

Macintosh® Macintosh II Macintosh SE Macintosh Plus Operating systems
MultiFinder
A/UX®
MS-DOS

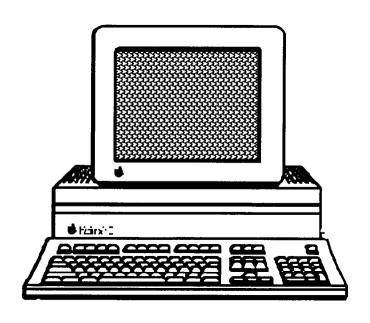
Peripherals
Input Devices
Display Devices
Storage Devices
Printers

Networking
Workgroups
Host Integration





Macintosh_® Technology



- Ease of use
- Consistent applications base
- Functionally rich set of applications
- Applications compatibility
- Tight system integration
- Lower training and support costs
- Higher productivity



Macintosh_® Productivity Gains

Five Year Cost Savings

• Over a five-year period, using a Macintosh vs. an MS-DOS machine can save \$5600 (or 28%) in training and support costs.

Source: Gartner Group

Productivity Increases

• Using a Macintosh can increase productivity up to 31%. Source: Peat Marwick, Macintosh Benefits Study, June 1987

Training and Support Cost Savings

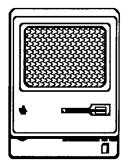
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Source: Diagnostic Research, Inc. 1988. Study of Fortune 1000 MIS Managers.



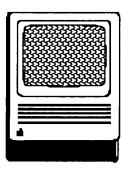
Macintosh_® Product Line

Macintosh Plus



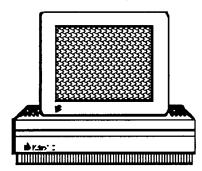
Entry Level

Macintosh SE



Versatile, Mainstream

Macintosh II



High Performance, Expandable

- 68000 microprocessor
- SCSI interface
- 1MB to 4MB RAM

- 68000 microprocessor
- SCSI interface
- 1MB to 4MB RAM
- Expansion slot
- 2nd internal drive
- 25 30% faster

- 68020 microprocessor
- 6 expansion slots
- 1MB to 8MB RAM
- Color
- 20MB, 40MB, 80MB
- Two to four times faster



Macintosh. II The high-performance, expandable, color Macintosh



- 68020 microprocessor
- 6 NuBus expansion slots
- 1MB to 8MB RAM
- Color
- 20MB, 40MB, 80MB
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Macintosh_® II Features: Performance

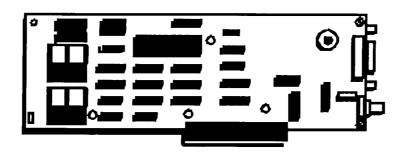
68020 processor running at 16 MHz 68881 math coprocessor 32-bit data path High-capacity SCSI-based storage options



Macintosh_® II Features: Expandability

Six NuBus slots SCSI port Internal hard disk options PMMU slot Unlimited video options

- Monitor resolution
- Multiple monitors





Macintosh. II Features: Color and Graphics

16-million-color palette

Color QuickDraw™ in ROM

Wide variety of display options

Multiple monitor configurations available



Macintosh_® II Software Solutions

Word Processing

FullWrite - Ashton-Tate

MacWrite - Claris

Word 3.0 - Microsoft

WordPerfect - WordPerfect

Databases

4th Dimension - ACIUS

dBASE Mac - Ashton-Tate

FoxBASE/Mac - Fox

FileMaker 4 - Nashoba

Spreadsheets

FullImpact - Ashton-Tate WingZ - Informix

Excel - Microsoft

Desktop Pubishing and Presentations

PageMaker - Aldus MacDraw II - Claris

Ready, Set, Go! - Letraset

Illustrator - Adobe

ImageStudio - Letraset

VideoWorks - MacroMind

PowerPoint - Microsoft

Presents... - Cricket

Networking

AlisaTalk - Alisa Systems

MacMainFrame - Avatar MacIrma - DCA

SoftPC - Insignia

pcLink - Pacer

VersaTerm - PC & S

Mac 240 - White Pine



Macintosh_® II Uses: General Business

Managers

- Multiple tasks can be performed simultaneously
- Wide range of powerful applications available (MultiFinder, HyperCard, high-quality productivity applications)

Department Specialists

• Power user system for advanced spreadsheet, database, project planning, etc.

Secretaries, Administrators

• Large screen, ease of use, advanced word processing software, and storage capabilities make the Macintosh II a superb and cost-effective administrative workstation



Macintosh_® II Uses: Apple Desktop Publishing

High-quality software:

	Layout	Graphics	Image Editing
Sophistication	QuarkXPress 2.0	Adobe Illustrator 88 Aldus FreeHand	Silicon Beach Digital Darkroom Letraset ImageStudio
	Aldus PageMaker 3.0 Letraset Ready, Set Go! 4.0	Claris MacDraw II	
		Deneba Canvas	
		Silicon Beach SuperPaint 2.0	
Macintosh II Advances:			

- Additional performance
- Color and gray-scale capabilities
- Display options
- NuBus for Macintosh



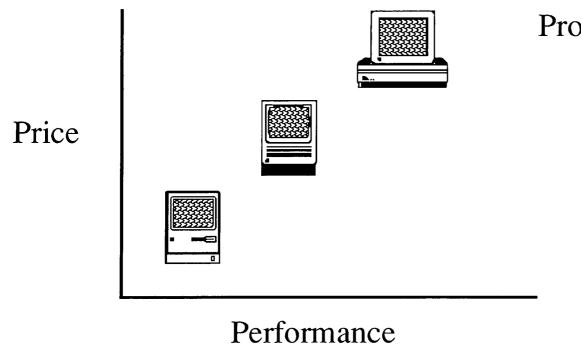
Macintosh_® II Uses: Engineering/Scientific

Macintosh II Engineering System:

- Diverse range of technical applications
- Business & management software
- Macintosh adavantages
- Networking



Macintosh_® Product Line



Product Line Benefits

- Growth path
- Selection to choose from
- Consistency across applications
- Common set of interfaces



Future CPU Directions

Fill the gap between the Macintosh_® SE and II

Continue to grow at high end

Develop alternative design centers

Make new technology mainstream

Apple Computer, Inc.

Macintosh II Sales Information



Macintosh_® II Business Systems





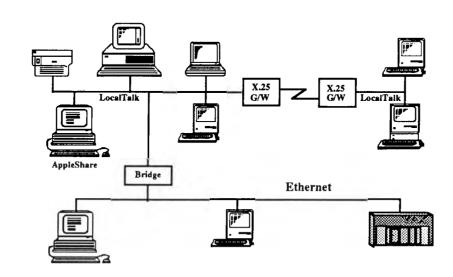
The Apple® Business Systems Family

Macintosh_®
Macintosh II
Macintosh SE
Macintosh Plus

Operating systems
MultiFinder
A/UX®
MS-DOS

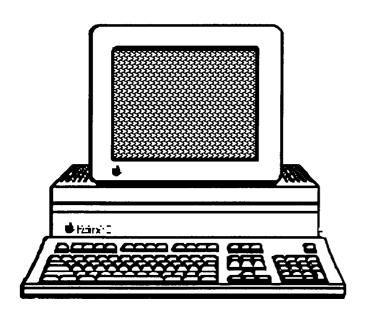
Peripherals
Input Devices
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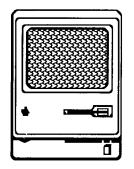
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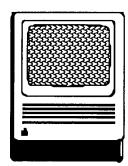
Macintosh_® Product Line

Macintosh Plus



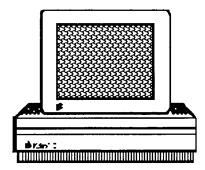
Entry Level

Macintosh SE



Versatile, Mainstream

Macintosh II



High Performance, Expandable

- 68000 microprocessor
- SCSI interface
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Macintosh. II The high-performance, expandable, color Macintosh



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Macintosh_® II Features: Performance

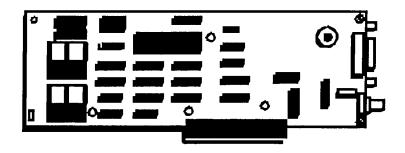
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16-million-color palette

Color QuickDraw™ in ROM

Wide variety of display options

Multiple monitor configurations available



Macintosh_® II **Software Solutions**

Word Processing

FullWrite - Ashton-Tate

MacWrite - Claris

Word 3.0 - Microsoft

WordPerfect - WordPerfect

Databases

4th Dimension - ACIUS

dBASE Mac - Ashton-Tate

FoxBASE/Mac - Fox

FileMaker 4 - Nashoba

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ImageStudio - Letraset

VideoWorks - MacroMind **PowerPoint** - Microsoft

Presents... - Cricket

Networking

- Alisa Systems AlisaTalk

MacMainFrame - Avatar - DCA MacIrma SoftPC - Insignia pcLink - Pacer - PC & S VersaTerm

Mac 240 - White Pine



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Sophistication	Go! 4.0	Deneba Canvas	
Macintosh II Advances:		Silicon Beach SuperPaint 2.0	

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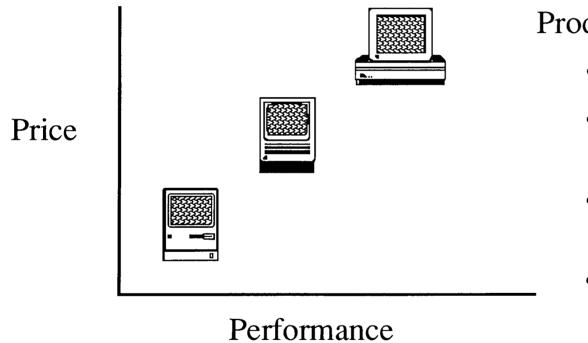
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- Consistency across applications
- Common set of interfaces



Future CPU Directions

Fill the gap between the Macintosh_® SE and II

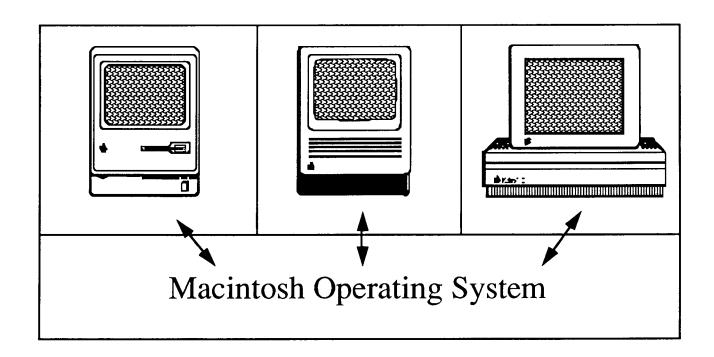
Continue to grow at high end

Develop alternative design centers

Make new technology mainstream



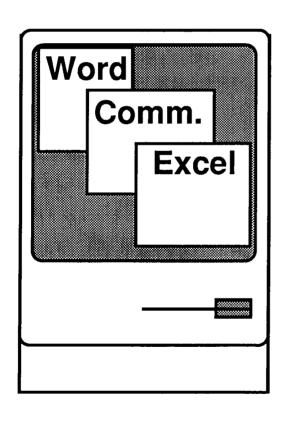
Macintosh_® System Software





MultiFinder_{TM}

Apple's First-Generation Multitasking Operating System



MultiFinder 1.0

- Fast context switching
- Background LaserWriter printing
- Background services
- Compatible with existing applications
- Works across entire product line



Operating System Uses

Macintosh® Operating System

- Primary Operating System
- First-Generation Multitasking Operating System
- Business, Gov't, Education, Engineering

MS-DOS

- Optional OS
- Coexistence in MS-DOS environment
- Business, Education

A/UX®

- Optional OS
- Standard UNIX
- University, Gov't, High-End Engineering



MS-DOS Applications Integration on the Macintosh_® II

SoftPC from Insignia Solutions, Inc.

- MS-DOS software emulation in a window under MultiFinder
- Cut and paste between MS-DOS applications and Macintosh applications via the Clipboard
- Runs all standard CGA-compatible MS-DOS applications
- XT speed

Mac286 Board (AST)

- An 80286-based MS-DOS computer running in a Macintosh II NuBus slot
- Runs all standard MS-DOS applications
- AT speed



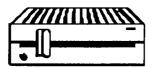
MS-DOS Data Integration on the Macintosh_® II

Media Transfer

- Apple_® PC 5.25 Drive
- Apple File Exchange
- DaynaFile

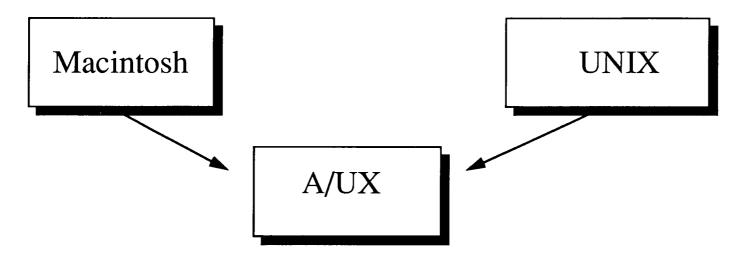
Workgroup Transfer

- AppleShare_® PC
- Novell





UNIX on the Macintosh_® II - A/UX_®



A/UX Offers...

Macintosh Interface

UNIX Compatibility

AT&T System V, Release 2, with Berkeley 4.2 Extensions

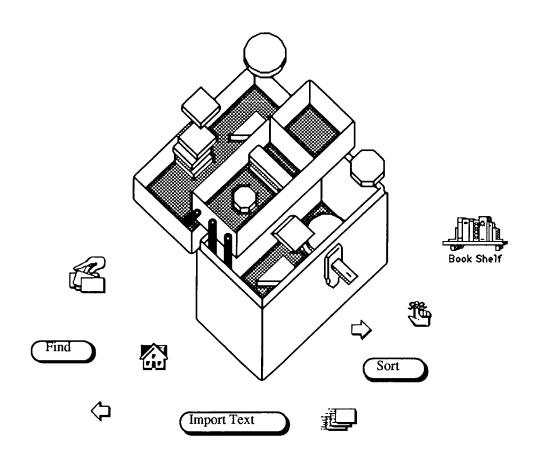
Easy System Integration

Access to Macintosh Application Base



HyperCard. - What is it?

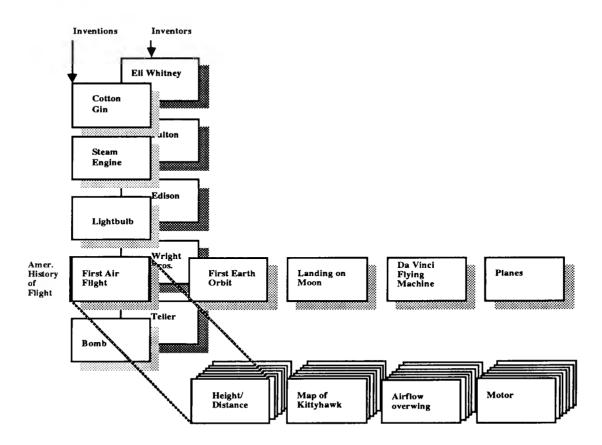
A Personal Information Toolkit





HyperCard_® - How does it work?

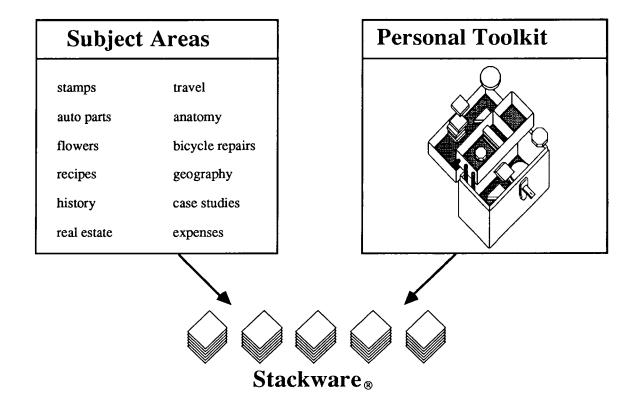
Organize information the way you think — by association and context— in addition to hierarchy.





HyperCard. - Business Uses

Transforms subject-matter experts into information providers





Future Operating System Directions

Expand multitasking capabilities

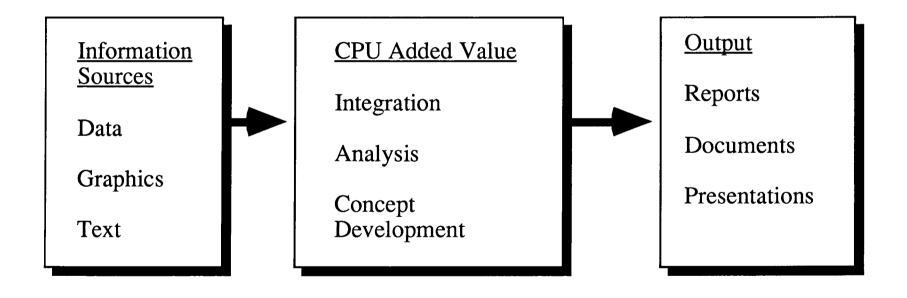
Maintain applications compatibility

Enhance user interface

Add broad new functionality

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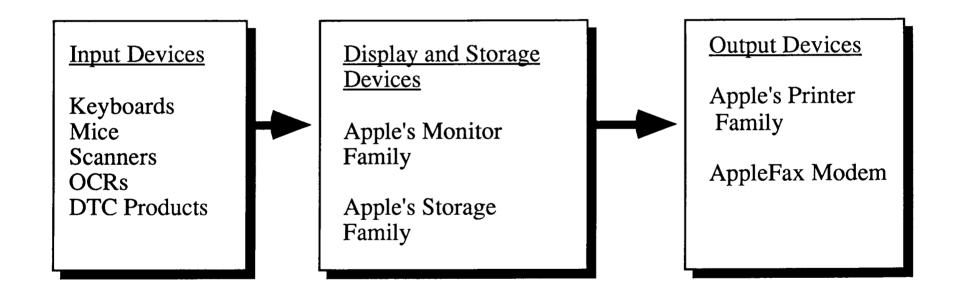
Apple's Business Peripherals — The Information Flow



Macintosh II Sales Information



Apple's Business Peripherals — Product Categories



Apple Computer, Inc.

Macintosh II Sales Information



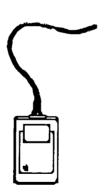
Input Devices - The Basics

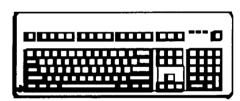
The Apple® Keyboard

The Apple Mouse™

The Apple Extended Keyboard







Apple Desktop Bus™

Apple Computer, Inc.

Macintosh II Sales Information



Input Devices - Scanners and OCRs

Gray-Scale Scanners

Microtek (256 gray levels)

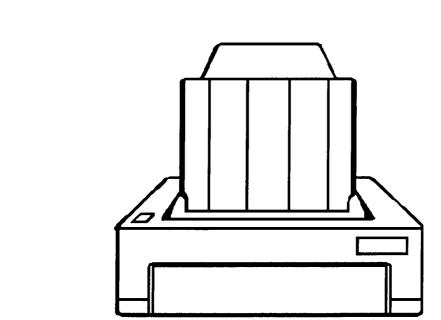
Color Scanners

<u>OCRs</u>

Abaton

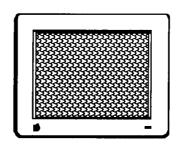
Sharp

DEST





Apple Display Objectives



Black-on-White Display - Resemble paper as much as possible

Font Generation - View small, clear fonts

Graphics Capability - All pixels recognizable

Ergonomics - Minimize eyestrain

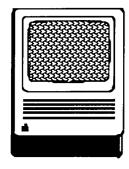


Display and Storage Devices Apple's Monitor Family

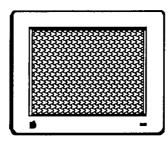
Macintosh® SE, Plus Monitor

Apple® Monochrome Monitor

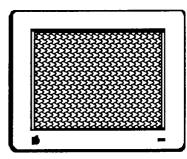
AppleColor™ High Resolution RGB Monitor



9 inch



12 inch



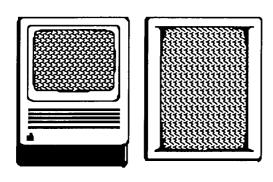
13 inch

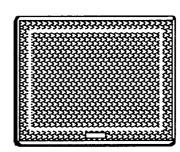
Apple Computer, Inc.

Macintosh II Sales Information



Display and Storage Devices: Third-Party Monitors





Monochrome Full Page Monochrome Two Page Color Full Page Color Two Page

Radius (Mac_® SE) Radius (Mac II) Radius E-Machines SuperMac SuperMac

SuperMac E-Machines

Apple Computer, Inc.

Macintosh II Sales Information



Display and Storage Devices: Apple's Storage Family

Internal hard disks

Macintosh® Internal 20SC Hard Disk Apple Hard Disk 20SC Apple_® Hard Disk 20SC Apple Hard Disk 40SC

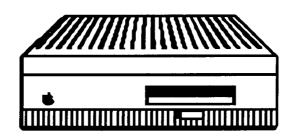
Apple Hard Disk 80SC

External hard disks

Apple Hard Disk 40SC Apple Hard Disk 80SC

Backup

Apple Tape Backup 40SC



Apple Tape Backup 40SC



CD-ROM – The AppleCD SC™

Unprecedented information access on the desktop

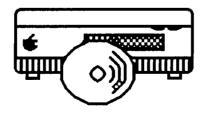
550MB read-only storage capacity

Text, graphics, and sound can be mixed on the disc

Easy distribution of information

AppleShare® 2.0 compatible

Discs currently shipping for desktop publishing and vertical markets (medical, real estate, accounting)

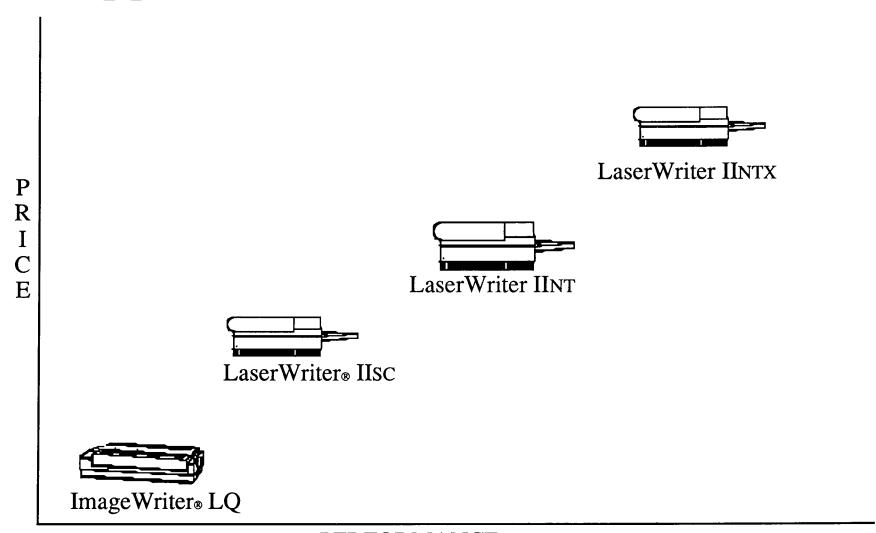


Apple Computer, Inc.

Macintosh II Sales Information

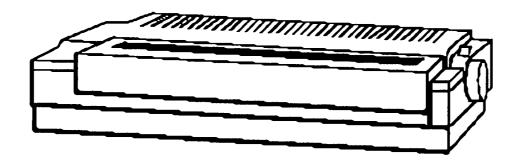


The Apple® Business Printer Family





ImageWriter_® LQ



Features:

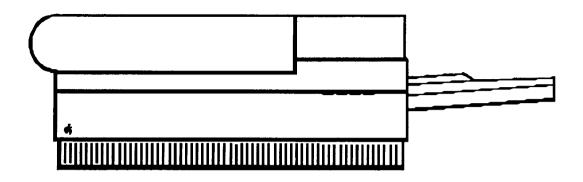
Letter-quality 27-pin head dot-matrix printer Advanced forms-handling capabilities Networkable Low cost

Uses:

Home and small business Corporations with forms-handling needs



LaserWriter_® IIsc



Features

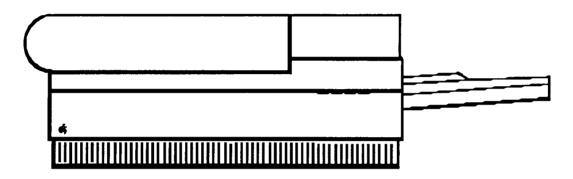
High-quality 300 dpi laser printing Cost effective Upgradable

Uses

Small businesses
Word processing professionals
Single user/Executive



LaserWriter_® IInt and IIntx



LaserWriter IINT:

Features

High-resolution text and graphics Networkable PostScript support

LaserWriter IINTX:

Features

High-resolution text and graphics Networkable PostScript support Expandable to 12MB of RAM Font expansion slot Powerful 68020 processor

Uses

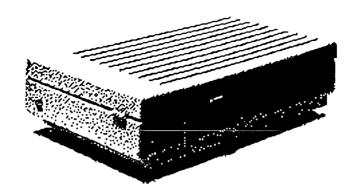
General-purpose laser printer Workgroup printing Graphic design professionals

Uses

High-speed, expandable laser printer Workgroup printing Graphic design professionals



Facsimile - The AppleFax™ Modem



Links Macintosh_® to worldwide base of facsimile machines

Sends Macintosh files in facsimile format

Provides functionality of high-end fax machines



Apple's Business Peripheral Strategy

Develop products that are integral to Apple's systems solutions

Add value to peripherals derived from our systems perspective

Provide leading-edge technology to the mainstream market

Develop products that are easy to use and have an elegantly simple design

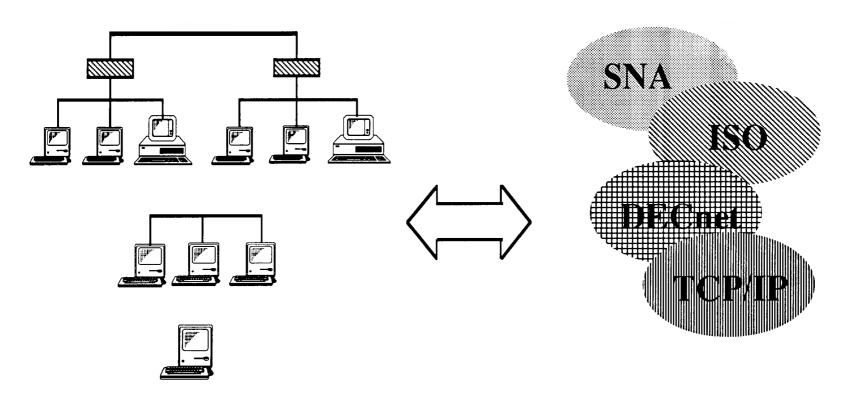
Apple Computer, Inc.

Macintosh II Sales Information

The Network and Communications Challenge

Personal Computers

Host Computing Environments



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Customer Needs

- Work together
- Access information



Apple's Desktop Communications Vision

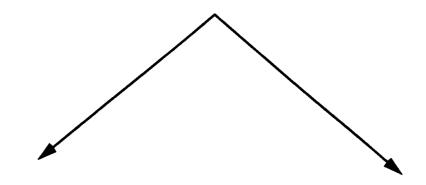
Extend the Macintosh_® concept to

- Productivity via workgroup computing
- Transparent data integration across vendor lines



Desktop Communications

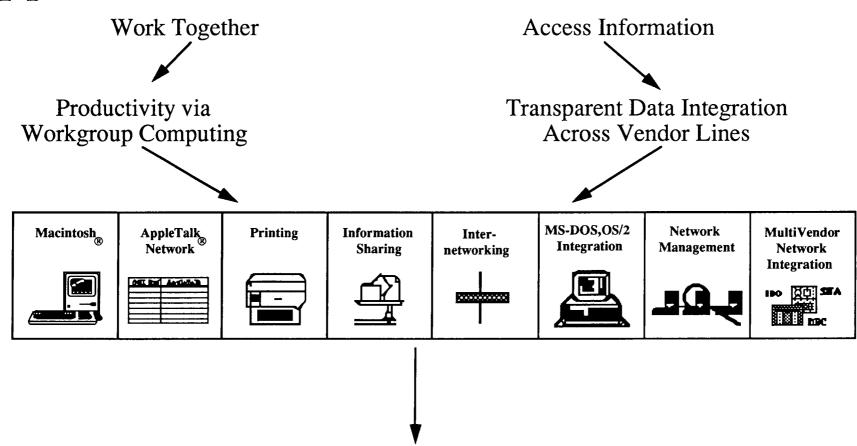
Apple's Two-Pronged DTC Strategy



Multivendor integration

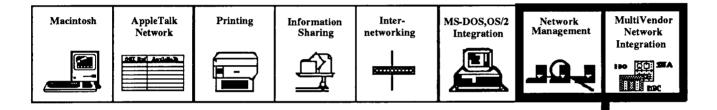
Superior functionality based on innovative technology

Apple's Communications Framework



Systems that meet customer needs

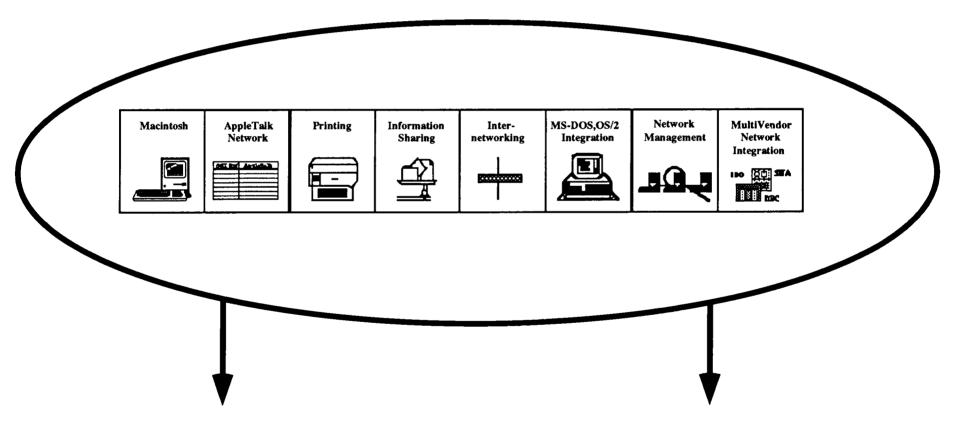
Network Management and Multivendor Integration



- AppleTalk Services for VMS
- MacWorkStation™
- LU6.2
- ISO Stack

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Apple's Communications Framework - Two Key Components



Apple's Workgroup Solution

Multivendor Integration

Apple Computer, Inc.

Macintosh II Sales Information

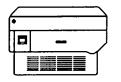
Apple's Workgroup Solution

Market Need

Product



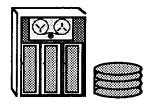
File Service — AppleShare_®



Printing LaserWriter, AppleShare



Mail InBox (Third Party)



Communications
Gateways

Netway 1000 (Third party)

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Extending the AppleTalk_®Network System

Other media types

Distance, performance

• Ethernet, Token Ring

Additional protocols

New services:

• virtual terminal

• network management

Multivendor support

MS-DOS, OS/2, UNIX, VMS, Others

• transparent data integration

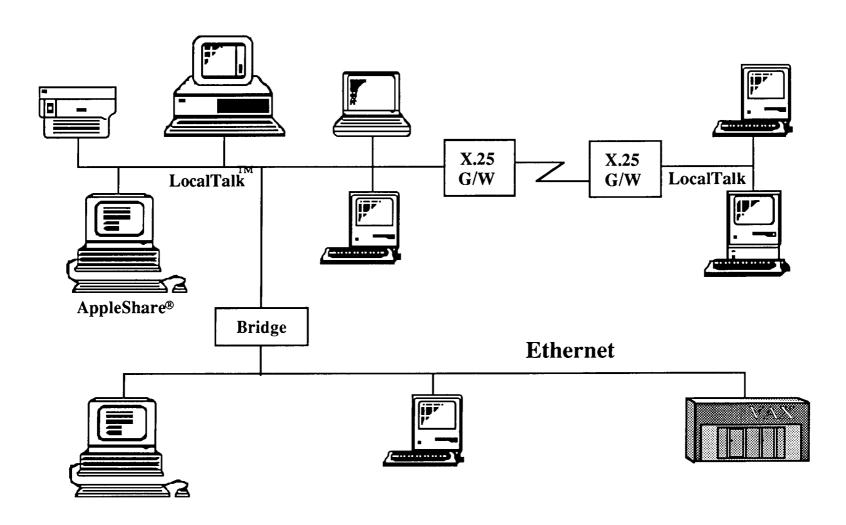
Bridges & gateways



Larger networks, wide area connectivity



The AppleTalk® Network System



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Apple's Integration Strategy

Target Environment	<u>Current</u>	Apple Solutions	<u>1989-90</u>
MS-DOS, OS/2	AppleTalk, 3rd party server nets		AppleTalk, 3rd party server nets
IBM Host	SNA/3270		SNA/LU6.2
DEC/VMS	AppleTalk/DECnet	-	AppleTalk/ OSI
Multivendor	TCP/IP, OSI tools, terminal emulsation		OSI /MAP/TOP

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Target Environment - MS-DOS, OS/2



Today

1989-90

Key Protocols MS-DOS 3.1, PC Slots, Redirector, AppleTalk®

3rd Party Proprietary Servers

OS/2, Micro Channel MS-DOS 3.1, PC Slots, Redirector, AppleTalk

3rd Party Proprietary Servers

Apple Solutions

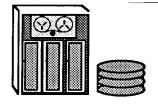
• AppleTalk: LocalTalk PC Card AppleShare® PC InBox/PC

• 3rd Party Proprietary Servers

Add Micro Channel Card

Add more 3rd Party Servers

Target Environment - IBM



Today **→ 1989-90**

Key Protocols

SNA/3270/LU 6.2

SNA/LU6.2 services

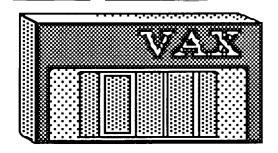
Apple Solutions

- AppleTalk® Gateways: Netway 1000A
- Coax Direct Connect:
 - DCA and Avatar Cards for Mac SE, II
 - AppleLine™

- Token Ring Direct Connect
- AppleTalk Gateways
- Coax Direct Connect



Target Environment: DEC Hosts



Today

1989-90

Key Protocols

AppleTalk® DECnet

AppleTalk OSI

Apple Solutions

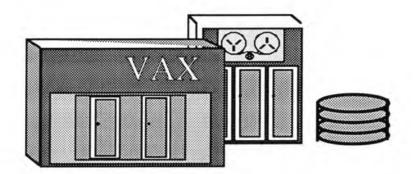
- AppleTalk For VMS
 - AppleTalk Bridges
 - Ethernet Direct Connects
- DECnet

- AppleTalk For VMS
 - AppleTalk Bridges
 - Ethernet Direct Connects
- OSI
 - AppleTalk Gateways
 - Ethernet Direct Connects

The Apple/DEC Alliance

Goal:

To provide access to the vast quantity of resources available through DEC connectivity, while maintaining the Macintosh_® identity and ease of use.



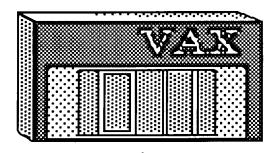
Focus Areas - Digital and Apple

Distributed applications
File sharing
Document interchange
Printing
Terminal emulation

Electronic mail
Conferencing
Database
Network management



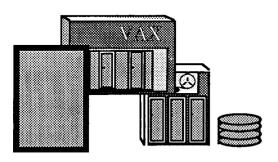
Local Talk



Ethernet



Target Environment - Multivendor



Today

1989-90

Key Protocols

TCP/IP/OSI

OSI services/MAP/TOP

Apple Solutions

- AppleTalk® Bridges
- Ethernet Direct Connects

- AppleTalk-ISO Gateways
- Ethernet Direct Connects
- Token Ring Direct Connects

The Evolution of Personal Computing

Interpersonal Computing Transparent distributed applications Networked - Data base - Messaging Personal - Document management Computing - Network management Work-group - Information presentation networks · Host connec-Personal tivity Computing Local data and resources 1991 1985 1988

As uncertainty grows around changing computer standards, a couple of questions come to mind.

Mac vs. PC: Comparing the Long-Term

tem) because the BIOS doesn't work in OS/2's protected mode, Mr. King said. Under DOS, PC manufacturers can differentiate their hardware.

c's Ease of Use Ma st of Training and

Firms Pit Unix Against OS/2 in Market Battle For Operating Syste

edefines PC Compati

hen PC compatibles started large numbers.

her each machine was fully TRM was virtu-

is ready for OS/2, their PCs will be ready for OS/2

Microsoft's current position is that each hardware manufacturer and distributor will have to provide a version of OS/2 with the requisite set of device drivers that will run with their particular PC models.

PC buyers can't take much comfort from tests run by Landogies Ltd. of Norwood, Mass

sople' Costs Will Up the Ante

"What have I got to lose?"

"What have I got to gain?"

Whenever you consider bringing a new computer into your work environment, one of your first requirements is that it work with the systems you have in place.

That's broadly defined as compatibility.

But as you get into the specifics of exactly what compatibility means to you and your organization, a couple of more precise definitions emerge.

For people who use MS-DOS systems,

the concept of compatibility has pretty much been defined by the PC industry: To be "compatible," a system has to be able to run MS-DOS.

And, like all true compatibles, Macintosh can.

Which means you can take virtually any MS-DOS application—such as Lotus 1-2-3, dBASE III, or WordStar—and run it, unaltered, on a Macintosh.

There's nothing more important than having everything work together.

With Macintosh, however, compati-

bility goes beyond simply the ability to run MS-DOS applications.

Macintosh also offers you complete data compatibility: the ability to access MS-DOS information, and then convert or translate that information to a form readable by Macintosh applications. From there, you can take advantage of the powerful graphics and analysis capabilities Macintosh offers.

With these definitions in mind, we'd

like to tell you about some of the hardware and software products available to help you achieve the level of compatibility you need.

Let's start with two options for running MS-DOS applications on a Macintosh computer.

SoftPC from Insignia completely emulates the operation of an IBM PC XT.

Through *software*. On the Macintosh. And at IBM PC XT speed.

We can describe it to you here. But you really have to see it to believe it.

Because what you'll see on the Macintosh screen—running in a window—is just what you're used to seeing on an MS-DOS machine. Right down to the familiar ">" prompt. Simply type

in DOS commands, and you can do everything you're used to doing on a traditional MS-DOS-compatible system.

Run a custom MS-DOS application you've created.

Perform a dBASE sort.
Revise a WordStar document.

Or just about any other task you need to accomplish under MS-DOS.

And because you're working on a Macintosh, you can even "cut and paste" information from an MS-DOS application directly into a Macintosh application.

For those of you who need a hard-ware-based MS-DOS option, there's the AST Mac 286, a complete IBM PC AT compatible on a card that plugs into the Macintosh II.

It, too, runs MS-DOS applications in a window And it runs them at PC AT speed.

Using a Macintosh computer just to run MS-DOS programs is, needless to say, not the best use for a Macintosh.

What's more important is to ensure that the Macintosh is data-compatible with MS-DOS systems. So that, when necessary, the two can work together.

And we have a range of solutions that can help.

One of these solutions is the Dayna-File disk drive. It can be connected to any Macintosh computer that has a SCSI connector.

And what it does is nothing short of amazing.

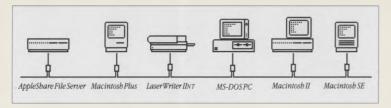




Depending on how you configure it, the DaynaFile can read from and write to any 5.25-inch (360-kilobyte and 1.2-megabyte formats) or 3.5-inch (720-kilobyte and 1.44-megabyte formats) MS-DOS disk directly from a Macintosh.

And the best part is that it displays the contents of the disk on the screen using the standard Macintosh interface. In other words, data files appear on screen as document icons, subdirectories appear as folders, and so on.

You can navigate through the contents of the disk using familiar point-andclick operations. And you can rename files, copy groups of files, and more—



With AppleShare and AppleShare PC, both Macintosh and MS-DOS computers can access file servers and networked printers.

more easily than you ever could using standard DOS commands.

Of course, there may be times when, even though you can access the file, you'll need to translate it to a format readable by Macintosh applications. Some older PC applications, for example, have file formats that cannot be read directly.

MacLink Plus is file transfer and translation software that supports the easy

exchange of files between
Macintosh and MS-DOS computers. Which means you can convert your existing Word-Perfect, WordStar, or MultiMate documents to MacWrite or Microsoft Word 3.0 format.
And more—MacLink Plus

includes over 25 data translators.

Any of the solutions you've seen so far are ideal for individual users of MS-DOS systems. There are also network options that allow you to share MS-DOS files with Macintosh users.

In keeping with our commitment to compatibility, we offer a variety of approaches to networking Macintosh computers and MS-DOS systems.

If you're using MS-DOS systems in a network, you're probably familiar with one of them: Novell's NetWare, the top-selling file server for PCs.

NetWare now supports the Apple

Filing Protocols.
Which is a technical way of saying that getting a Macintosh and a PC to share information is as easy as connecting a LaserWriter*
printer: Just plug it in.

Of course, if you're not currently networking your PCs, we'd like to suggest you start with the AppleShare* File Server.

AppleShare software works in basically the same way as other Macintosh applications do— with the same windows, icons, and point-and-click operation.

And when you add AppleShare PC soft-

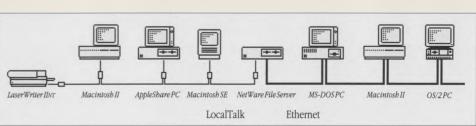
Which means that, for example, a
Lotus 1-2-3 file stored on the server can be
directly opened in Microsoft Excel by any
Macintosh connected to the file server.
And, conversely, an Excel file saved in WKS

format can be opened from 1-2-3.

Through this transparent information-sharing between systems, we're making it possible for people who use

people who use Macintosh computers and those who use MS-DOS PCs to work together better.

And we're ensuring that nothing gets in their way.



With Novell's NetWare, a network of MS-DOS and OS/2 computers can incorporate Macintosh computers over multiple wiring schemes.

ware and a LocalTalk™ PC Card to each

of your MS-DOS PCs, both they and con-

nected Macintosh computers can access

the information stored on the file server.



When we introduced the Macintosh, we offered people a powerful personal computer they could begin using productively within a remarkably short period of time. Because Macintosh was the first personal computer that insulated people from the often-overwhelming complexities of computing.

We based its operation on images, or icons, from an environment you're more than likely familiar with: your desk. We used a sheet of paper to represent a document; a folder to represent a group of related documents; a trash can to dispose of the items you don't need any more.

And we equipped every Macintosh with a mouse, so that instead of having to remember the series of keystrokes required to print a document, for example, you could simply point to a menu at the top of the screen, pull it down, and click to perform the desired task.

We designed Macintosh this way for an important reason.

We believed that the sooner people became familiar with the way their computer worked, the sooner they could start improving the way they worked.

But there's more to Macintosh than just ease of use.

Macintosh personal computers are sophisticated systems that deliver the processing power necessary to perform a variety of tasks. And today you'll find this power accessible through a wide range of applications—applications such as WordPerfect for word processing, Microsoft Excel for financial analysis, and 4th Dimension for database management.

In fact, once you've had a chance to use a Macintosh yourself, we're pretty sure you'll arrive at this conclusion:
It's really something else.

There's no denying the complexity of today's powerful business applications. And learning bow to access the many functions can be an exercise in memorization. To assist you, Macintosh applications use menu bars that display the functions and commands available for a given application. The Macintosh also uses graphic images, whenever possible, to clarify the way it works — and the way you work with it. The icons you see here, for example, typify the way a Macintosh looks to its user. Documents look like pieces of paper, folders look like file

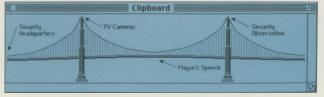
folders, and so on.

Everything.













The Macintosh popularized many now standard personal computer features—pull-down menus, icons, windows. But one of the most significant is its ability to display text and graphics together on the screen, and then print them with true "what you get is what you expected" results.

Using a Macintosh feature called the Clipboard and simple "Cut" and "Paste" commands, you can easily move text and graphics back and forth between applications. To make it easier to perform functions and to navigate around the screen, each Macintosh comes with a mouse. Whenever you need to perform a task, such as printing, selecting text, or moving an object on the screen, all you have to do is point, press the button, and move the mouse.

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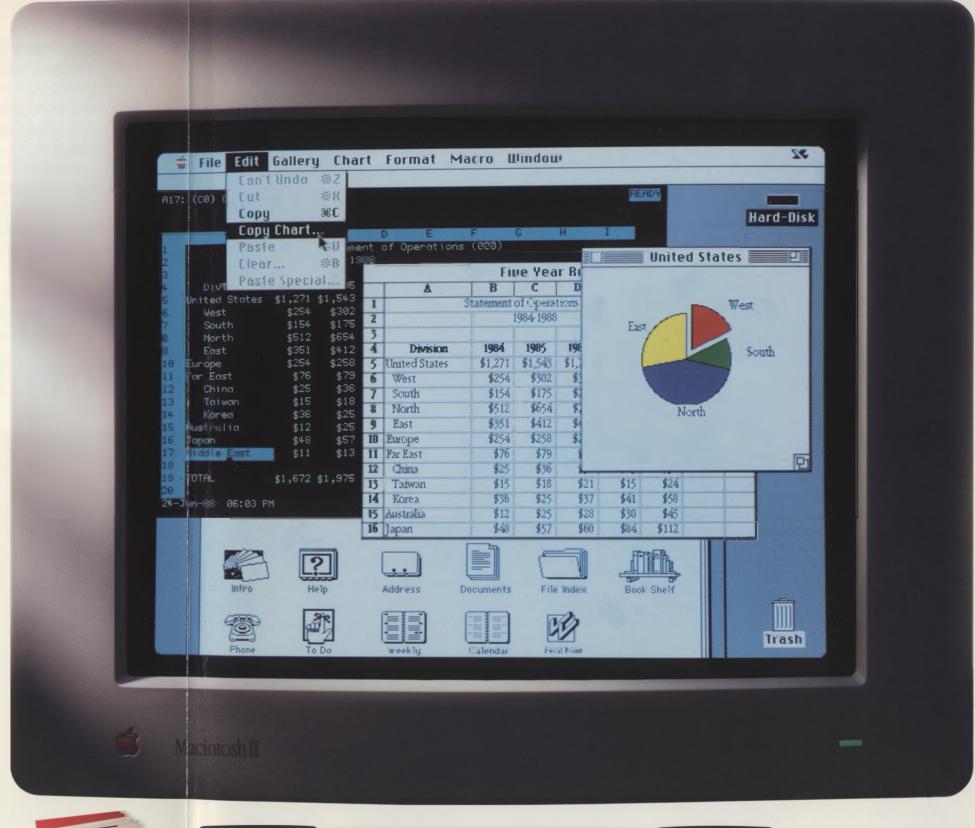
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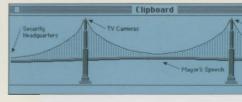
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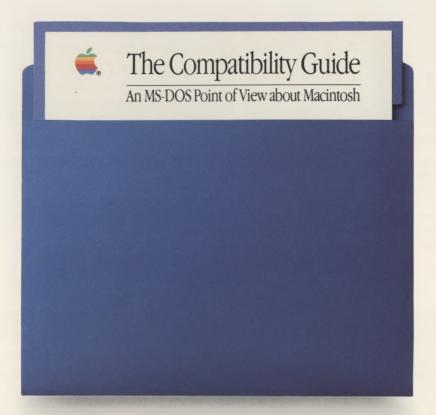




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We've got a few more things to show you.



First, we'd like to show you some of the specific advantages of integrating Macintosh computers with MS-DOS systems.

Sowe've prepared an MS-DOS-format disk that you can run on your computer. It details many of the solutions we've showcased in this brochure and, based on your answers to a series of questions about your business operations, it will recommend which of those

solutions may meet your needs.

Just ask an Apple Desktop Communications specialist for your free copy.

The second thing we'd like to show you is the Macintosh. Up close. So you can see for yourself what a difference it can make.

But we should warn you:

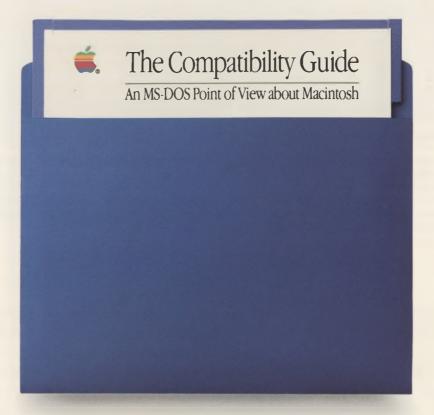
Once you've had a chance to work with a Macintosh, you may find it difficult not to set your sights on owning one.



Apple Computer, Inc. 20525 Mariani Avenue Cupertino, California 95014

© 1988 Apple Computer, Inc. Apple, the Apple logo, AppleShare, AppleTalk, LaserWriter, and Macintosh are registered trademarks of Apple Computer, Inc. LocalTalk and MultiFinder are trademarks of Apple Computer, Inc. AST is a registered trademark of AST Research, Inc. DaynaFile is a trademark of Dayna Communications, Inc. dBASE III is a registered trademark, and FullWrite Professional is a trademark, of Ashton Tate Corporation. 4th Dimension is a registered trademark of ACIUS/ACI. IBM is a registered trademark and AT and PC XT are trademarks, of International Business Machines Corporation. Lotus and 1:2-3 are registered trademark of Lotus Development Corporation. MacLink Pilus is a trademark of DataViz, Inc. Microsoft and MS-DOS are registered trademarks of Microsoft Corporation. MultiMate is a trademark of Microsoft and MS-DOS are registered trademark of Microsoft Corporation. WordPerfect Corporation. WordPerfect Corporation MordStar is a registered trademark of MicroPro International Corporation.

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Once you've had a chance to work with a Macintosh, you may find it difficult not to set your sights on owning one.



Apple Computer, Inc. 20525 Mariani Avenue Cupertino, California 95014

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Overview

The Apple® PC 5.25 Drive is ideal for Macintosh® personal computer users who want to use data created with MS-DOS applications. Compatible with formatted MS-DOS 5.25-inch disks, the Apple PC 5.25 Drive allows Macintosh SE and Macintosh II users to exchange files between MS-DOSformatted media and Macintoshformatted media. And when a coprocessor or hardware emulator is installed in the system, the Apple PC 5.25 Drive can act as an MS-DOS drive, enabling users to actually load and run MS-DOS programs. This affordable, highly reliable data storage system is easily attached to a Macintosh disk-drive controller card.

Features

► MS-DOS-format drive with a standard connector

Benefits

- ► Provides easy data exchange between Apple and MS-DOS-formatted 360-kilobyte, 5.25-inch disks.
- ➤ Acts as an MS-DOS drive when used with a system that includes a coprocessor.
- ► Provides compatibility with MS-DOS computers using a standard DB-37 connector.

▶ NEC controller chip

- ► Provides the same data transfer rates as MS-DOS drives.
- Offers compatibility with copyprotected MS-DOS applications.

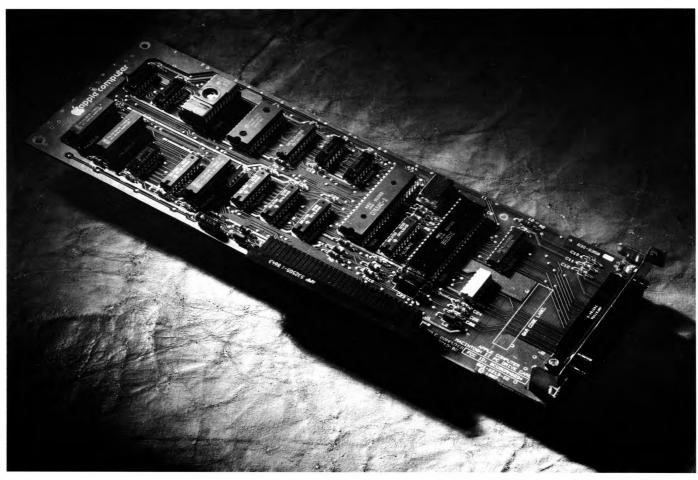


Apple PC 5.25 Drive

System Requirements	To use the Apple PC 5.25 Drive, you will need:	► A Macintosh SE personal computer with the Macintosh SE-Bus PC Drive Card or a Macintosh II personal computer with the Macintosh II PC Drive Card	► A compatible third-party drive connection such as the AST 256 Card
Technical Specifications	Recording media ► 5.25-inch removable floppy disks Capacity ► Formatted capacity: 360 kilobytes per disk ► Recording surfaces: 2 ► Tracks per surface: 40 ► Tracks per inch: 48 Characteristics ► Average seek time: 19 milliseconds ► Transfer rate: 250 kilobits per second	 ▶ Rotational speed: 300 rpm ▶ Average startup time: 500 milliseconds Power requirements ▶ 12 volts DC ± 10% —Maximum: 0.6 amps/Peak 0.9 amps —Typical: 0.36 amps ▶ 5 volts DC ± 5% —Maximum: 0.65 amps —Typical: 0.5 amps Interface ▶ Connects to Macintosh SE and Macintosh II computers via an internal drive card. 	Environmental requirements ► Operating temperature: 50° to 104° F (10° to 40° C) ► Relative humidity: 20% to 80% noncondensing ► Maximum altitude: 10,000 ft. (3,048 m) Size and weight ► Height: 2.9 in. (7.2 cm) ► Width: 6.37 in. (16.2 cm) ► Depth: 8.3 in. (20.7 cm) ► Weight: 4.78 lb. (2.17 kg)
Ordering Information	Apple PC 5.25 Drive	Order No. A9M0110	With your order, you'll receive: ► Apple PC 5.25 Drive ► Owner's guide ► Limited warranty statement
	Macintosh SE-Bus PC Drive Card	Order No. M5023/A	
	Macintosh II PC Drive Card	Order No. M5056/A	

Macintosh II PC Drive Card





Overview

The Macintosh® II PC Drive Card provides the link between an Apple® Macintosh II personal computer and the Apple PC 5.25 Drive. With this hardware and the Apple File Exchange program (included), you can convert many standard MS-DOS data files so they can be used in Macintosh applications.* You can also convert Macintosh files into the MS-DOS format.

Features

- ► Direct interface between Macintosh II and Apple PC 5.25 Drive
- ▶ User installable
- ► Apple File Exchange program included

Benefits

- ► In conjunction with Apple File Exchange software, allows your Macintosh II to convert files between the Macintosh and MS-DOS formats.
- ► Plugs in easily.
- ▶ Provides all the interfacing hardware and software you need for a complete data-conversion solution between the Macintosh and MS-DOS environments.

^{*}See the Apple PC 5.25 Drive and Apple File Exchange software data sheets for additional information.

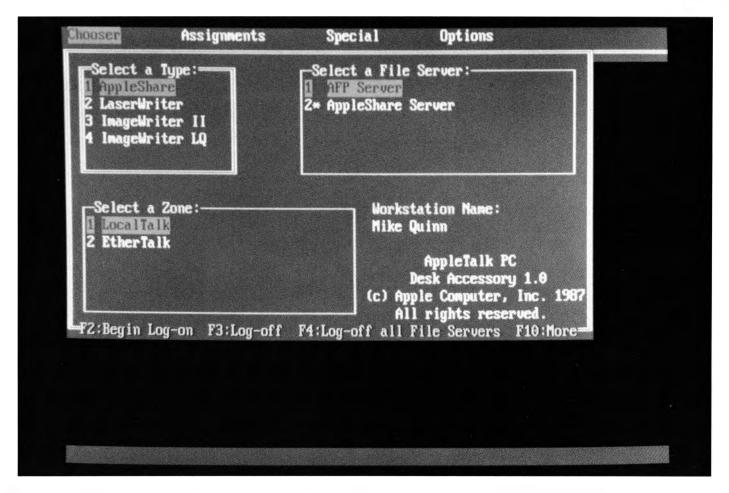


Macintosh II PC Drive Card

System Requirements	► A Macintosh II personal computer	► An Apple PC 5.25 Drive	► Apple File Exchange software (included with the Macintosh II PC Drive Card)
Technical Specifications	Interface ➤ NuBus [™] ; plugs into any Macintosh II slot	Disk Compatibility ► Apple PC 5.25 Drive (uses 360K disks)	
Ordering Information	Macintosh II PC Drive Card	Order No. M5056	With your order, you'll receive: ► Macintosh II PC Drive Card ► Apple File Exchange software and user's guide ► Limited warranty statement

AppleShare PC





Overview

AppleShare® PC software offers two important advantages to users of PC-compatible computers. In addition to providing access to information stored on an AppleShare file server, Apple-Share PC gives MS-DOS users full access to the power of the Apple®

LaserWriter® printer. Now MS-DOS users on an AppleTalk® network have the same ability as Macintosh users to access folders, documents, applications, storage space, and peripherals. And using the AppleShare server from an MS-DOS system is as easy as using a local disk drive.

AppleShare PC is ideally suited to the requirements of the growing community of users who work in a mixed Macintosh/MS-DOS environment. Not only does it let MS-DOS users store applications and files in one convenient location, it also provides access to network printers directly from MS-DOS applications.

Benefits

► MS-DOS access to AppleShare file server

- ► Allows MS-DOS users and Macintosh users to access information stored on the same AppleShare file server.
- ► Lets MS-DOS users and Macintosh users share information created by applications that use a common file format (for example, Lotus 1-2-3 for the IBM PC and Microsoft Excel for the Macintosh, or dBASE III for the IBM PC and dBASE Mac for the Macintosh).
- Lets AppleShare PC users share MS-DOS applications stored on AppleShare file-server volumes. (The software license must specifically allow application sharing.)
- MS-DOS access to networked printers
- ▶ Gives MS-DOS users full access to the power of LaserWriter printers—including dozens of type styles and sizes and full-page, high-resolution graphics—through MS-DOS applications that support the PostScript® page-description language.
 ▶ Performs Epson LQ2500 emulation when working with older MS-DOS applications that don't support PostScript.
- ► Gives MS-DOS users access to networked ImageWriter® dot-matrix printers.
- ► Controlled access to directories (folders) stored on AppleShare servers
- ► Provides privacy and personal control over information shared with others on the network.
- Lets the directory's owner choose to limit access in the following ways:
- —To keep the directory private;
- —To give access privileges to a predefined group of users; or
- —To give access privileges to everyone on the network.

Features

Benefits

► Controlled nature of access, based on directory type

- ▶ Documents stored in *private directories* can be seen or changed only by the directory's owner.
- ▶ Documents stored in *shared directories* can be seen and read by everyone on the network; a directory's owner can specify that:
- —The documents can be changed only by the owner. (This is useful for storing forms that you wish everyone on the network to be able to copy and use but not change.)
- —The documents can be changed by others on the network.
- —Documents stored in one-way "drop box" directories (which are much like one-way mail slots) can be seen and changed only by the owner. However, anyone on the network can copy documents into the drop box. (This is useful for collecting and storing sensitive documents such as expense reports and personnel evaluations.)
- ► Transparent functionality
- ► Lets MS-DOS users work with information on an AppleShare server as if it were located on a local MS-DOS disk.
- ► Makes accessing applications and information simple and efficient.
- ► Allows users to access AppleShare servers located on other AppleTalk networks, through add-on bridges such as the Hayes InterBridge and Kinetics FastPath.
- ► Lets users connect to servers, change access privileges, and execute DOS utilities from within an application, through pop-up menus.
- ► Lets MS-DOS users access network printers as if they were connected locally.
- ► Command-line interface
- ► Allows construction and editing of batch files for automatic log on and other tasks.



AppleShare PC

Product Details

AppleShare volumes

AppleShare volumes appear to MS-DOS users as logical DOS drives, and are accessed using standard DOS commands. Most applications and documents can be stored and used on the server with no modification.

Access procedures

Accessing information is simple and efficient; users need only remember one password. Once a user has logged on to a server, the server automatically manages access to all directories.

Printing

Through AppleShare PC, users of MS-DOS applications that support PostScript (such as Microsoft Word and Word-Perfect) can take full advantage of the power of Apple Laser-Writer printers. This includes

producing documents in a wide range of type styles and sizes, and with full-page, high-resolution graphics. For users of older MS-DOS applications that do not support PostScript, Apple-Share PC provides an emulation of an Epson LQ2500 printer.

MS-DOS/Macintosh compatibility

With AppleShare PC software, both MS-DOS users and Macintosh users have access to documents created using either of the two operating systems. In addition, AppleShare PC provides file extension mapping that allows MS-DOS users to easily assign a Macintosh icon type and application appropriate to a data file.

Privacy

AppleShare PC fully supports the AppleShare file server's powerful access privilege. Fileserver users control information by selectively granting access to the directories they have created on the file-server volumes. Setting access privileges allows a directory's owner to keep information private, share it within a workgroup, or make it available to everyone on the network.

Installation

The procedure consists of installing AppleShare PC software on a startup disk, adding a LocalTalk™ PC Card to an IBM PC or PC-compatible computer, and attaching the computer to an AppleTalk network equipped with an AppleShare server and a networked printer.

System Requirements

To use AppleShare PC software, you will need:

An MS-DOS computer (minimum 384K of RAM) with two floppy disk drives, and MS-DOS version 3.1 or later

► A LocalTalk PC Card (Order No. M2313)

► A LocalTalk Locking Connector Kit (DB9) (Order No. M2065) Recommended equipment:

A hard disk drive

Ordering Information

AppleShare PC

Order No. M0673

With your order, you'll receive:

► Two AppleShare PC installer disks (both 5.25-inch and 3.5-inch formats)

► AppleShare PC User's Guide

Limited warranty statement

LocalTalk PC Card

Order No. M2313

With your order, you'll receive:

- ► LocalTalk PC Card
- Two 360-kilobyte, 5.25-inch floppy disks (a startup disk and an applications disk)

► One 3.5-inch disk (includes both startup and application)

- ► LocalTalk PC Card Owner's Guide
- Limited warranty statement

LocalTalk Locking Connector Kit (DB9)

Order No. M2065

With your order, you'll receive:

LocalTalk locking connector

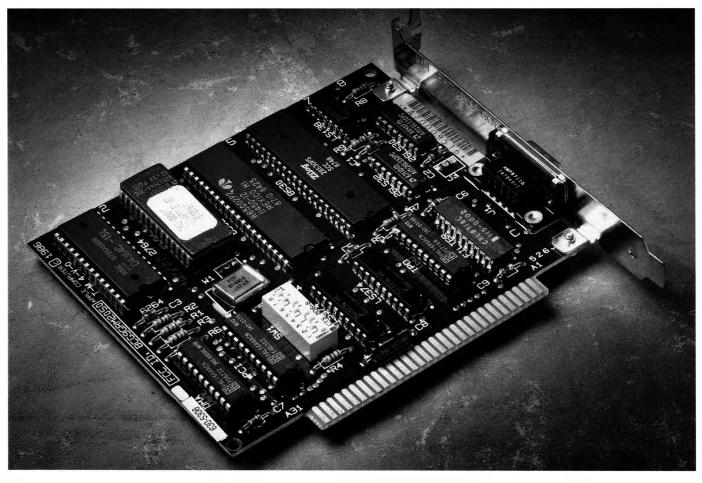
- (DB9)
- Two-meter cable
- Cable extender
- Setup guide

Apple Computer, Inc.

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LocalTalk PC Card





Overview

LocalTalk PC Card, a half-size card for the PC expansion bus, allows users of MS-DOS computers to share the unique benefits of the AppleTalk® Network System—including the ability to print professional-quality documents on networked Apple® LaserWriter® printers. The LocalTalk PC Card also provides the foundation for other network services, such as electronic mail, print service, and file and peripherals sharing. For example, with the addition of AppleShare® PC software, MS-DOS users can share information with Macintosh® users on the network through an AppleShare file server, and take full advantage of the power of the LaserWriter printer.

Features

- ► LaserWriter printing for PC-compatible computers using PC LaserWriter program
- ► Attaches to LocalTalk Cabling System
- ► Information sharing between Macintosh and MS-DOS systems

Benefits

- ▶ Brings professional-quality printing to documents produced on PC-compatible computers.
- Gives MS-DOS users access to the LaserWriter printer's wide range of type styles and sizes, and graphics capabilities.
- ► Lets Macintosh and PC-compatible computers share information, using software such as AppleShare PC.
- ▶ Allows integration of MS-DOS information into Macintosh applications such as desktop-publishing programs.
- ► Connects PC-compatible computers to the fastest-growing workgroup network.



LocalTalk PC Card

System Requirements	To use the LocalTalk PC Card, you will need: ► An IBM PC, PC XT, PC AT, PS/2 (Model 25 or Model 30), or a compatible computer ► A minimum of 256K RAM with either two double-sided floppy disk drives or one hard disk drive and one floppy disk	drive, and MS-DOS Version 3.1 or later (or a compatible operating system) An AppleTalk network that uses the LocalTalk cabling system A LocalTalk Locking Connector Kit (DB9)	Recommended equipment: An Apple LaserWriter, Laser Writer Plus, LaserWriter IINT, or LaserWriter IINTx printer Appropriate LocalTalk network cables for all additional computers on the network AppleShare File Server and Print Server software AppleShare PC workstation software	
Technical Specifications	 ▶ AppleTalk protocol support ▶ LAP, DDP, ATP, NBP, ZIP, EP, PAP, RTMP, ASP Driver interface ▶ Accessed through software interrupt with parameter block Processor ▶ 65C02; 1.8-megahertz clock speed Memory ▶ 8 kilobytes RAM, 8 kilobytes ROM AppleTalk communications controller ▶ Zilog 8530 SCC Interfaces ▶ RS-422 serial port (230.4-kilobaud data transfer rate); DMA interface to host PC 	Configuration Selectable Interrupt Request (IRQ), DMA Request and Acknowledge (DRQ and DACK), and I/O Address; default configuration corresponding to PC COM2 device Power consumption 4 watts at 5 volts DC (typical) Size PC half-size card (5 in. long by 4.5 in. high) Applications supported Lotus 1-2-3, MultiMate, and WordStar (directly from PC LaserWriter program menu) dBASE II, III, and III Plus; DisplayWrite 3; Framework I and II; Microsoft Word 3.0; MultiMate Advantage; PC-Write; Perfect Writer; RBase 5000; Symphony; SideKick; Word-Perfect; and WordStar and WordStar 2000 (through ASCII menu option)	Print-file formats supported PostScript® Diablo 630 ASCII Printer utilities functions Select LaserWriter Rename LaserWriter Rename LaserWriter Send test page Accessible fonts Courier, Helvetica®, and Times® Roman (directly from PC LaserWriter program menu) All LaserWriter fonts (using PostScript commands) PostScript programming access PostScript programming additions may be made directly within the text of a file, or indirectly by modifying the PC LaserWriter program dictionary files so that programming additions can be made available to all documents.	
Ordering Information	LocalTalk PC Card Order No. M2313	With your order, you'll receive: ► LocalTalk PC Card ► Two 360-kilobyte, 5.25-inch floppy disks (a startup disk and an applications disk)	 One 3.5-inch disk (includes both startup and application) LocalTalk PC Card Owner's Guide Limited warranty statement 	
	LocalTalk Locking	Order No. M2065		

AppleShare PC Software

Connector Kit (DB9)

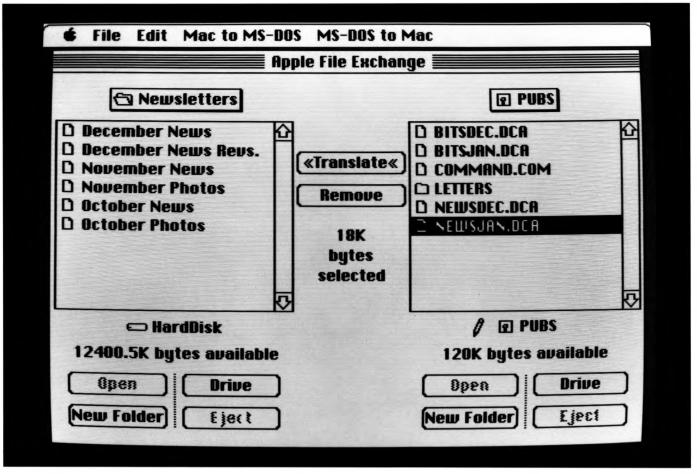
Order No. M0673

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Overview

The Apple® File Exchange utility program allows a file or document created by one application to be translated into the format required by another application. When used with the Apple PC 5.25 Drive, it transfers and translates between Macintosh® and MS-DOS environments, or with a Macintosh 3.5-inch drive, it transfers and translates between Macintosh and ProDOS® formats. It can also be used with data files transferred to Macintosh disks via network or data communications links.

Features

- ► File conversion between applications
- ► Macintosh/MS-DOS and Macintosh/ProDOS transfers
- ▶ Batch translation
- ► Includes text, binary, and DCA-RFT/ MacWrite translators that all work under a common user interface
- ► Standard framework for development of additional translators

Benefits

- ► Makes documents and files created with one application usable in others, allowing more versatile use of your information.
- ► Allows greater flexibility in data sharing, by providing a bridge between different operating environments.
- ► Automates the translation of large numbers of files—even documents from different applications.
- ► Handles a wide range of general filetranslation needs.
- ► Offers easy-to-learn, easy-to-use file translation.
- ► Encourages development of specific application-to-application translators.



Apple File Exchange

Product Details

Translators

The Apple File Exchange program works with "translators" that control the conversion of file formats between dissimilar applications. The package includes translators to handle some common translations.

Many applications feature an import option that does translation. The binary translator included with Apple File Exchange allows documents to be converted for use with these applications.

The text translator translates bidirectionally between plain text formats of the MS-DOS, Macintosh, and ProDOS operating systems.

The DCA-RFT/MacWrite translator translates bidirectionally between IBM Document Content Architecture Revisable Text Format and the MacWrite format.

Additional translators for use with Apple File Exchange are available from independent software developers such as DataViz, Inc. These follow the user and software interface standards set by Apple's translators.

Apple File Exchange can work with multiple translators simultaneously. Simply indicate the files you want translated, and the program selects the appropriate translator from the available set.

System Requirements

To use Apple File Exchange, you will need:

For data on Macintosh disks:

- ► A Macintosh Plus, Macintosh SE, or Macintosh II personal computer
- Any additional applicationto-application translators

For data on 5.25-inch MS-DOS-formatted disks:

- ► A Macintosh SE or Macintosh II personal computer
- ► An Apple PC 5.25 Drive
- ► The appropriate controller card
- Any additional applicationto-application translators

For data on 3.5-inch ProDOS-formatted disks:

- ► A Macintosh 512K Enhanced, Macintosh Plus, Macintosh SE, or Macintosh II
- ► Any additional applicationto-application translators

Technical Specifications

Translators included:

- ► Text
- ▶ Binary
- DCA-RFT/MacWrite

Translators available from DataViz:

- ► DCA-RFT/MacWrite or Microsoft Word 3.0
- ► Lotus 1-2-3/Microsoft Excel
- MultiMate/MacWrite or Microsoft Word 3.0
- ► WordPerfect/MacWrite or Microsoft Word 3.0
- ► WordStar/MacWrite or Microsoft Word 3.0

Ordering Information

Apple File Exchange will be available in two ways:

1) Packaged with the Macintosh SE-Bus PC Drive Card (Order No. M5023) and the Macintosh II PC Drive Card (Order No. M5056). 2) Included with the Macintosh system software. Contact your authorized Apple sales representative for further details.

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NetWare for Macintosh brings the comprehensive features of NetWare local area networks to the user-friendly Apple® Macintosh environment. Macintoshes and PCs can now interoperate on NetWare LANs.

Featuring 100 percent AppleTalk® compatibility, the product transforms economical IBM-compatible PCs into high-performance AppleShare™ network servers. NetWare for Macintosh allows file, message and printer sharing with other Macintoshes and with PCs.

NetWare for Macintosh is a software package that gives Macintosh workstations full access to the services of NetWare v2.15 network servers (SFT, Advanced or ELS Level II). Enhanced security, resource accounting and system fault tolerance are features available to NetWare for Macintosh users.

A major benefit to Macintosh users is that NetWare for Macintosh ensures smooth operation with future enhancements to the AppleTalk Personal Network. Written "by the book" to conform with Apple's AppleTalk Filing Protocol (AFP) and Printer Access Protocol (PAP). NetWare for Macintosh was designed with Apple's technical assistance and in strict compliance to their standards. As Apple enhances AppleShare, NetWare for Macintosh is enhanced. Applications written to run on AppleShare run on NetWare for Macintosh. The first release of the product accommodates both the LocalTalk™ and EtherTalk™ Macintosh cabling schemes.

Features

Users don't sacrifice "friendly" for "functional" with NetWare for Macintosh. Teamed with the NetWare server software is Apple's popular AppleShare workstation software. Users who are experienced with AppleShare require no retraining to use NetWare for Macintosh. To the Macintosh user, information stored on the network

server is listed using familiar Macintosh icons. Pictures of documents represent files, pictures of folders represent directories and pictures of folders within folders represent subdirectories. To other workstations on the network (PCs running DOS, OS/2 or Windows/386), directories, subdirectories and files are listed in the format of the workstation operating system.

File sharing is easy with NetWare for Macintosh. Files from both PC users and Macintosh users are stored in the same directories of the same network server. Users can open files from the server as easily as they open files from their local drives. PC files that share the same format as their Macintosh counterparts (like PageMaker®, Excel and ThinkTank/MORE) can be opened from either workstation. Easy-to-use translation utilities are available to translate files with incompatible formats.

Printer sharing is easy and economical with NetWare for Macintosh. Now PC users and Macintosh users can share Apple's LaserWriter® PostScript® printers. Sharing costly peripherals like laser printers makes business sense. NetWare's print spooling and print queue management features make the practice easy and efficient.

NetWare for Macintosh internetworking introduces countless opportunities for sharing resources and information across your office's existing networks – NetWare supports more than 30 PC-LAN topologies. Sharing printers, files and messages across like or unlike network topologies is transparent. LAN resources can be utilized by each member of every network with NetWare for Macintosh.

NetWare for Macintosh introduces a new universe of network services to Macintosh users. Enhanced security, resource accounting and system fault tolerance top the list of features that make NetWare for Macintosh the premium networking solution.

NETWARE FOR MACINTOSH The enhanced security feature's four levels of user access are the industry's most elaborate. Access can be limited to designated directories, to a specified Macintosh workstation or to specific hours of the day. Passwords are encrypted. Users can be required to periodically change their passwords, to use passwords that they have not used in the past, and to use passwords that are longer than a minimum length. Users can also be given a pre-determined number of tries at logging in before the system locks them out.

NetWare resource accounting allows system supervisors to monitor network use and bill user accounts accordingly. This feature allows the supervisor to:

- Set up an allowed credit limit for each user
- Let NetWare monitor account balances and logoff users with expired or depleted accounts
- Generate an audit trail of system use Accounts can be charged for network services based on:
- · Connection time
- · Blocks read from disk
- · Blocks written to disk
- Requests received from a workstation
- Amount of disk storage used.

Charges can be varied by time and by day.

System Fault Tolerant (SFT) NetWare includes the industry's most stringent collection of features designed to protect against system failure.

Technical Specifications

Designed specifically for the Apple Macintosh, NetWare for Macintosh requires an 80286 or 80386 network server running NetWare v2.15 or higher. AppleShare workstation software is included with NetWare for Macintosh. As a configuration option, NetWare for Macintosh can run on a NetWare bridge, separate from the network server.

Hardware requirements:

Network workstations:

Macintosh II, SE, Plus or 512e IBM PC XT, AT or compatibles IBM PS/2 Models 25, 30, 50, 60 or 80

Network server:

Novell 286A, 286B or 386A IBM PC AT or compatibles IBM PS/2 Models 50, 60 or 80

NetWare network servers support disk drives with capacities as large as 256MB.

Total storage capacity of a single NetWare network server is 2GB.

Minimum network server memory: 2MB All Macintosh models have a LocalTalk port. Connecting Macintoshes to LocalTalk LANs does not require a LocalTalk adapter. However, a LocalTalk adapter is required in the network server. Using the appropriate adapters, AppleTalk networks can also run Ethernet.

For More Information

Call Novell NetWare Products Division, 801-379-5900.

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hat good is a workgroup that can't work as a group?

Working as a group gives you the power to accomplish tasks that are impossible individually. Teamwork makes businesses run.

Without teamwork, you've got problems.

Today, teamwork isn't limited to people working with people. In most of today's businesses, people work with computers. And if the computers that work for one group can't team with the computers that work for another group, you've got serious problems.

Enter Novell NetWare.

NetWare is computer software. It is a special breed of software. It's designed specifically to connect (network) computers — efficiently and effectively.

When it comes to teaching computers to communicate, nothing comes close to NetWare.

Take NetWare for Macintosh.

It's a high-performance connectivity solution for Apple's® Macintosh computers. With NetWare for Macintosh, users can quickly and easily share files, messages, even printers. When they like. With anyone they like.

Anyone.

Even with IBM PC users.

Which brings up a good point. NetWare gives your users freedom. Specifically, a freedom to choose. Choose the computer, the cable, the programs and the printers that work best for them.

So they can do their best work for you.

NetWare for Macintosh®

NetWare, gives you the freedom to choose.

Again.

Choose interoperability

Choose what?

Make the choice that gives your computers the ability to interoperate; to work together; to become part of the team.

NetWare gives you the freedom to choose (and the technology to integrate) the hardware and software that works best for you.

Some users prefer PCs running DOS. Windows/386 has also become a popular



Users familiar with the Macintosh interface recognize these descriptive "icons." You access sophisticated services (like the NetWare server) by "clicking" on its icon.

PC operating system. Some like the new OS/2. And others (you know the type) can only be separated from their Macintoshes when their cold, dead fingers are pried from their Mac's mouse.

With NetWare, users can choose any of these options and still enjoy the network's full services. In fact, a NetWare network may be the only place in existence where users running DOS, Windows/386TM, OS/2TM, or the Macintosh operating system can work on the same network, in the same workgroup, with the same files — now that's teamwork.

Accounting personnel who have a favorite spreadsheet program can choose it and use it. The VP of finance can access and review the files with either a PC or a Macintosh. If

there are problems with the bottom line, a solution can be communicated across the network (from Mac to PC and back) via electronic mail.

Different parts of a marketing presentation may be assigned to different members of the project team. They can work on their assignments independently — on the computers of their choice. The final project can come together electronically and be produced in a fraction of the time it would take conventionally.

Writers, editors and designers can now work on the same project, at the same time — on different computer systems.

Ask *any* other networking company what freedoms they offer. We think you'll be impressed — to choose NetWare.

Choose compatibility

When our engineers designed NetWare for Macintosh, they did it by the book — Apple's book. That wasn't particularly easy for us. But the extra effort makes networking a breeze for you.

Macintosh users, Macintosh programs, Macintosh developers, even the big Macintosh (Apple Computer) see NetWare for Macintosh as being Macintosh throughand-through.

To users, NetWare is transparent. Opening a file that is stored on the network server is as easy as opening a file on a local drive — just point, and click.

With NetWare for Macintosh software running at the network server, teamed with Apple's AppleShare™ running at the workstation, users see the friendly Macintosh interface — menus that pull down and buttons that go "boingg."

To programs, NetWare for Macintosh uses the same rules as does AppleShare for Macintosh. Programs that are "AppleShare Aware" are NetWare aware. Your

compatibility problems are a thing of the past.

To developers, NetWare for Macintosh is right on target. Developers don't have to decide between Apple's rules and a network vendor's proprietary rules. Developers can now write applications to the Macintosh standard: AppleTalk™ — developed by Apple, incorporated by Novell®.

To Apple, NetWare for Macintosh's use of the AppleTalk protocols is a step in the direction of standardization. Standardization means less support problems and more public praise.

Choose functionality

NetWare for Macintosh functionality is based on the NetWare network server. Network servers are PCs that service the requests of users on the network. These servers manage file sharing, message sharing and printer sharing.

NetWare gives network servers different levels of functionality. Functionality available to NetWare for Macintosh includes enhanced security, resource accounting and system fault tolerance.

Choose enhanced security

Enhanced security would make Sgt. Joe Friday smile. The feature includes measures that protect your files from the eyes of the unauthorized. NetWare security is unequalled — period.

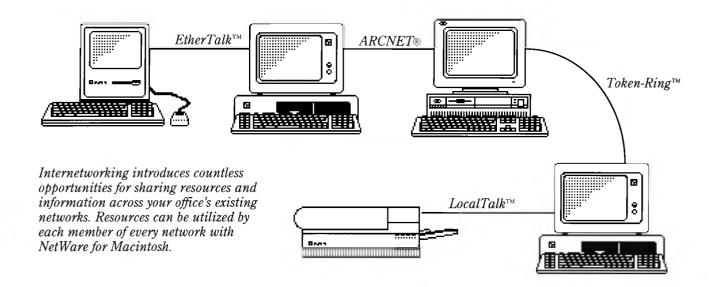
Let's say someone wanted to access your files. You could set up a security scheme so tight the intruder would have to be at the right machine, at the right time of day, with the right password.

If, by chance, you are coerced into sharing your password, unfriendlies are still out of luck.

You can set up NetWare so that it requires periodic changes of your password. It can also require that your password have some meat to it. No more initials.

It can even require that you use a password that you haven't used in the past. So unless you have a verrrrry large basement, your pet's names won't do for long.

Passwords are even encrypted. The network server randomly scrambles them



before it saves them. Only the server knows a user's password. If lost, the secret word goes to password purgatory. Even the system supervisor can't recover a lost password. The supervisor can, however, assign a new word to give you a new start.

Choose resource accounting

Resource accounting in NetWare for Macintosh gives you some incredible possibilities. The feature tracks resource use.

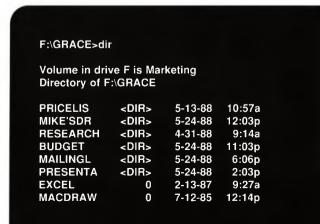
If, for example, you manage a desktop publishing service bureau, patrons could be given a password and an account. When a patron logs in, the network server begins to tally charges.

The actual fees can be varied depending on what day it is. Saturday traffic may warrant a higher charge than other days.

Users can be charged for connection time, for files retrieved and stored from network drives, for requests made to the network server and for disk storage space used.

With NetWare for Macintosh, users on PCs and users on Macintoshes can access the same files from the same server — displayed in a format they are used to.

PC Display



Choose fault tolerance

If you value your work, you should work to protect it. The System Fault Tolerant features in SFT NetWare are designed to keep your computer data safe from hardware failures.

Best of all, SFT features are transparent to you. They don't affect the way you or your network performs. And they are optional. Choose what you use. Ignore what you don't.

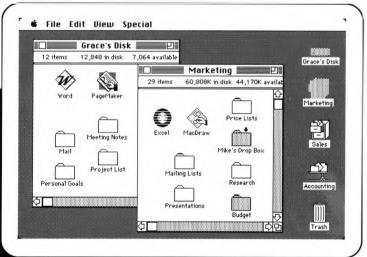
Here's what SFT protection includes:

Redundant Directory Structures

When your computer looks for a file on the network server's disk, it uses a directory. If a disk defect prevents access to the directory, your computer can't find the needed file. This is not good news.

SFT duplicates these important directories — on different parts of the disk. If one is damaged or unreadable, the second serves as a everpresent standby.

Macintosh Display



Directory Verification During Power Up

Each time the network server is turned on, SFT features check your file directories for defects and errors.

Read-After-Write Verification

Whenever you save a file to disk on the network server, SFT immediately attempts to read the recorded file. This measure makes sure files are saved properly.

Hot Fixin

If read-after-write verification fails, SFT marks the defective area of the disk as bad. SFT then resaves the file on a good area of the disk — while you work.

Disk Mirroring

With disk mirroring, your files are instantly and automatically saved to two separate network disk drives. If the original disk fails, the duplicate takes over — quickly and automatically.

Disk Duplexing

With disk duplexing, all of the cabling and related hardware between the server and the disk drives is duplicated. If a problem — like a loose connection — keeps your files from reaching a drive, duplexing provides an alternate route.

Split Seeks

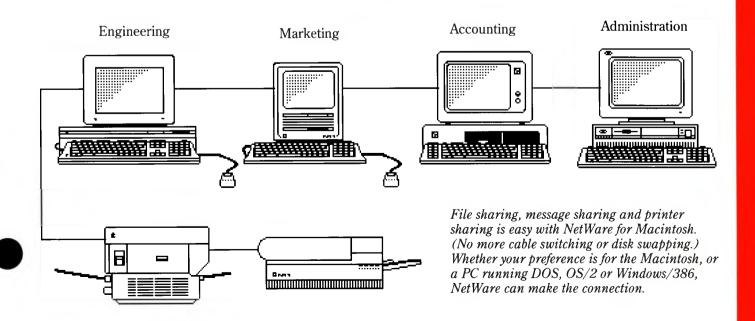
A feature of disk mirroring and disk duplexing, split seeks enhance network performance.

When you request a file from the network server, the server itself determines the fastest way to retrieve your file. With duplicate disks and cabling, the server can split the file requests between the duplicate drives. Splitting these requests (seeks) reduces congestion in the file server — and speeds disk access.

Transaction Tracking System (TTS)

Transaction tracking keeps your stored files pure. We don't have to describe what you feel when you're saving a file and the power goes out — you've been there.

A partially saved file can cause you some serious heartache — especially in the database world.



First, partial saves can go unnoticed for months. Second, database files are usually dependent ("related" in computerese) on other database files. The address file is related to the invoice file. The invoice file is related to the aging file. The aging file is related to the accounts receivable file.

Corruption in one of these relations can quickly spread through a number of your files.

TTS eases the pain of server, software or workstation failures. TTS marks files on the way to be stored with "begin" and "end" markers. If the NetWare server receives a begin without an end, the save is aborted.

Files remain uncorrupted. When power is restored, the file can be fully saved. And, the work goes on.

Choose the leader

When you choose to go with NetWare, you choose stability. NetWare networks have been around longer than any other.

NetWare maturity is unmatched. The NetWare operating system is now in its eighth generation. Each generation marks an improved version built on the original foundation. You don't need to throw out the old to use the new. Nor do you need to retrain or rehire. Our upgrades are designed to streamline your business, not disrupt it.

With more than 220,000 NetWare operating systems in use, NetWare LANs are the clear choice of the majority.

Get your workgroups working as a group—today.

Get NetWare for Macintosh.

The only choice left is yours.

World Headquarters 122 East 1700 South Provo, Utah 84601 (801) 379-5900

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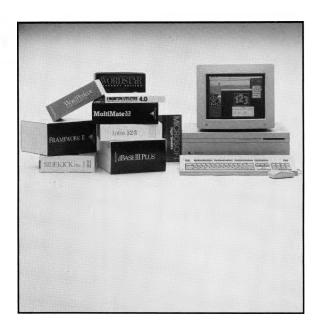


MS-DOS Compatibility...Without Hardware!

Now there really is a better way for Mac II and SE users to run their DOS-based applications. SoftPC, integration technology from Insignia Solutions. It's like having an IBM PC/XT right inside your Mac. And it's 100% software!

Synthetic Hardware

No boards to add in, and no hassles. SoftPC is a cinch to install. Just like you'd expect from any Mac application. And it gives you all the capabilities of a real IBM PC, right down to the processor, disk drives, keyboard, screen, even the MS-DOS operating system. All in a very familiar Mac window. And all with XT-class performance. Even faster.



MS-DOS With Macintosh Power and Versatility

SoftPC runs DOS programs alongside your Mac applications. Just double-click on the PC icon. Use Lotus 1-2-3, Flight Simulator, dBase III, WordPerfect, plus thousands more popular DOS applications. Even your own. Cut, copy and paste from DOS to Macintosh applications. Run multiple DOS and Macintosh programs simultaneously under MultiFinder. And of course you can transfer files between PC and Mac formats.

SoftPC runs under Finder on any Mac II or accelerated SE with as little as 2 Mbytes of memory and 3 Mbytes of hard disk space. And there's no need for added disk drives or other extras. Of course to run Multifinder and simultaneous applications, you'll probably want additional memory.

Why Software is **The Solution**

SoftPC simply makes more sense than hardware. Would you rather buy add-in hardware for your Mac that only helps in PC mode? Sacrifice slots you might need for memory upgrades, and communications, when there's a better way? Wouldn't it make more sense if you upgraded the basic power of your Mac, and got DOS compatibility at the same time? That's what SoftPC is all about! It doesn't break, so there's really no maintenance to worry about. And upgrades install from a disk. Best yet, SoftPC is economical, and it will stay that way. Talk about a smart investment!

For users who want the productivity of MS-DOS business applications and the versatility, graphics, and power of the Mac II or accelerated SE, SoftPC is the solution. And you will find it exclusively at Softsel!

SoftPC Leaps To #4 On Softsel "Hot List" In Just Three Weeks

Inglewood, CA July 5, 1988

SoftPC, which allows a Macintosh or other non-Intel-based desktop computers to run MS-DOS programs and gives Macs and UNIX-based products complete PC/XT compatibility, has climbed to the #4 spot on Softsel Computer Products Inc.'s "Hot List" of best selling products in just five weeks since it began shipping.

"This is one of the fastest climbs I've seen for a new product," noted Softsel's co-founder and co-chairman, Bob Leff. Inglewood-based Softsel has an exclusive North American distribution agreement with Insignia Solutions, developers of SoftPC. The "Hot List" is sent to resellers each month.

"Dealer demand for the product has been amazing," Leff noted. "We carry over 2,000 software titles, including some 700 Macintoshoriented programs. This is one of the most popular introductions I've seen," he said.

Leff said he believes SoftPC represents a "huge market opportunity for resellers, including dealers trying to sell Macs into the corporate market or anywhere there is a mix of Macs and IBM PCs and compatibles. This is the compatibility and connectivity solution everyone has been waiting for".

Macintosh and SUN 3 end-user versions of SoftPC began shipping in May. Beta test and OEM versions were introduced last year.

SoftPC allows these and other non-Intel based desktop computers to run popular MS-DOS applications, such as Lotus 1-2-3, without modification, and with PC/XT performance. When run on a Macintosh or under UNIX, SoftPC creates a window within the display that looks like an IBM monitor, complete with on-off switch," noted Tom Billings, Insignia's President.

"For example, SoftPC allows users to open windows on several DOS and Macintosh programs simultaneously; move back and forth between windows, and support cut and paste between programs."

In addition to providing a complete compatibility solution, the all-software emulator facilitates connectivity by letting users move files between DOS formats and Mac or UNIX formats in a completely seamless manner.

SoftPC for Macintosh II, accelerated SE, and SUN 3 computers is \$595.

Insignia and SoftPC are registered trademarks of Insignia Solutions, Inc.; UNIX is a trademark of AT&T Bell Laboratories, Inc.; MS-DOS is a trademark of Microsoft, Inc.; Macintosh is a trademark of Apple Computer, Inc.

SoftPC is MS-DOS compatibility for the Macintosh...Without hardware!

For users who want the productivity of MS-DOS business applications and the versatility, graphics, and power of the Mac II or SE, SoftPC is the solution.

© *Insignia Solutions Inc.* Cupertino, CA 95015-0399, 1988 (408) 446-2228

POWER SYSTEMS COMPARED: MACINTOSH II

IBM PS/2 Model 80

A detailed comparison of the Mac II and IBM's PS/2 Model 80 shows similar performance, but different features, software options, and pricing.

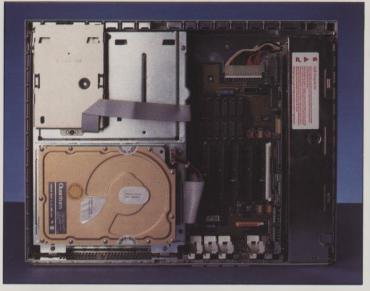


've been living a charmed life: For the past several weeks, I've had a Macintosh II and an IBM PS/2 Model 80 sitting side by side on my desk. For a computer-lover, it's a little like having a Ferrari Testarossa and a Lamborghini Countach cheek by jowl in the garage waiting for me to turn the key.

With the Mac II, Apple shed the Mac's

BY
PHILLIP
ROBINSON

small footprint and portability to gain color, a large hard disk, and expansion slots. For almost all business applications, this trade-off is an enormous gain for the Mac family. The least expensive Mac II configuration, at \$3,898, comes with a single 3.5-inch floppy disk drive: a silly setup. The model with a 40MB built-in hard disk, which also includes



The Mac II (above) sports a single 800K floppy drive, six NuBus expansion slots, and a 44MB hard disk manufactured by Quantum.

The IBM PS/2 Model 80 CPU (right) is slightly larger than the Mac II and has eight proprietary Micro Channel Architecture slots.



APPLE MACINTOSH II

Apple Macintosh II with 1MB RAM, 40MB hard disk, 800K floppy disk drive, standard keyboard, mouse, Macintosh II Video Card, AppleColor high-resolution RGB monitor, System software (with MultiFinder), HyperCard.

PRICE: \$6,996

MANUFACTURER: Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014; 408-996-1010

IBM PERSONAL SYSTEM/2 MODEL 80

IBM Personal System/2 Model 80 with 1MB RAM, 44MB hard disk, 1.44MB floppy disk drive, keyboard, mouse, 8513 color monitor, PC-DOS 3.3, and Microsoft Windows.

PRICE: \$7,994

MANUFACTURER: IBM Corp., Old Orchard Rd., Armonk, NY 10504; 914-765-1900

the single floppy drive, is the minimal practical system. With a color monitor and the Apple extended keyboard, it costs \$6,996.

The least expensive Model 80 system includes a 44MB hard disk and a single 3.5-inch floppy drive, for \$6,995. Adding an IBM 8513 color monitor, a mouse, PC-DOS 3.3, and Microsoft Windows (to make the system's graphics comparable

to those of the Mac II) raises the system's cost to \$7,994.

These two computers have similar disks and disk interfaces, screen resolution, size, and even expansion capabilities. There are six expansion slots inside the Mac II case; the PS/2 Model 80 has eight slots. The Mac II video port is on its add-in video card, while the video port of the Model 80 is built in and does not use up a slot.

REAL ESTATE

The Mac II and the Model 80 both ship with 1MB of RAM, an embarrassingly small amount clearly chosen to keep down the official list prices of these machines. The Model 80 can't even run its own new operating system (OS/2) without at least 1.5MB, and the Mac II can't take advantage of the MultiFinder without 2MB or more.

The Model 80 is the more expensive initial buy, but peripherals for the Model 80 may end up being much cheaper than peripherals for the Mac II. Hard disks for PC compatibles, such as the Compaq Deskpro, run about half the price of hard disks for the Mac.

The Mac II's processors and disk drives are contained in a separate rectangular CPU box, much like that of an IBM PC/AT or other MS-DOS machine. The keyboard and monitor are separate and connect to a port and a video card, respectively, on the back of the CPU box.

The Mac II box is significantly smaller than that of the Model 80, however. The Model 80 measures 23 by 19 by 6.5 inches, whereas the Mac II checks in at only 19 by 14.5 by 5.5 inches. The Mac II is also lighter: 25 pounds compared to the Model 80's 40 pounds. But the Model 80's system box is designed to stand on the floor, so only its keyboard and monitor take up space on the desk. The Model 80 has a stand on one end and a handle on the other, with the disk drives and power switch at the top of the front side.

The Mac II CPU can be moved off the desk to conserve space, but it isn't as suited to the tower orientation. Standing the Mac II system box on end covers up the cooling slots on one end of the box. However, you can buy a floor stand for about \$40 to free up the cooling vents.

COLOR AND KEYBOARDS

Both the Mac II and the Model 80 offer a top graphics resolution of 640 by 480 pixels, and both displays are crisp. The IBM Video Graphics Array (VGA) standard can paint the screen with up to 16 colors at a time (out of a total of 256), as can the Mac's standard video board. The optional Mac II Video Card Expansion Kit, at \$149, can allow the Mac to display up to 256 colors at once (out of a total of 16.7 million).

I advise anyone who is looking at a Mac II to try it with Apple's extended keyboard (\$100 extra if you buy it with

the Mac II system, or \$229 if purchased separately). The extended keyboard is almost identical to the Model 80 keyboard, with separate cursor and pagemovement keys, and programmable function keys across the top. The extra function and page-movement keys will eventually make it easier to use many Mac applications, although at this writing, most programs don't support the extra keys. The Mac II keyboard attaches to the back of the system box through the ADB (Apple Desktop Bus) port, and it contains a second ADB port. Apple's ADB system lets you daisychain a number of input devices—a real advantage for tasks that might require a graphics tablet, a mouse, and a keyboard, for example.

POWER PLANTS

The heart of the Mac II is a Motorola 68020 32-bit microprocessor, along with a 68881 math coprocessor chip. This team can be at least several times faster than the 68000 processor in a Mac SE on just about any task, even opening windows or sorting a disk directory. For processor-intensive tasks, ranging from spelling checks to small database sorts, this speed is a great boon. With CAD programs, for example, graphics manipulation can be from 10 to 100 times faster than on an SE.

The PS/2 Model 80 is built around an Intel 80386 32-bit chip, which runs at approximately the same speed as the 68020. There have been plenty of arguments about which chip is actually faster, but for most comparable applications, the performance of both chips is very similar. The Model 80 has a socket for an 80387 math coprocessor chip, but in the standard configuration this socket is empty, putting the basic Model 80 behind the Mac II for CAD work.

The Mac II can hold as much as 8MB of RAM on the motherboard. With the standard 1MB, or even with 2.5MB installed, you may feel cramped. I stopped worrying about memory problems with MultiFinder running only after I got 5MB under the hood. I was able to run MultiFinder and open Microsoft Word, Aldus PageMaker, and HyperCard all at the same time, and still have room to open and close other applications such as a CAD or graphics program. The PS/2 Model 80 can hold as much as 16MB of RAM, with 4MB on the motherboard. However, you will need special software such as OS/2 or Desgview to run multiple programs and switch between them, as you are able to do with MultiFinder on the Macintosh.

For removable storage, the Macintosh floppy holds 800K; the Model 80 floppy packs 1.44MB.

The Mac II's expansion slots use the NuBus architecture, a bus that has been around for a few years on some workstation systems. There are very few expansion boards for the Mac at this point, however. The PS/2 uses IBM's new, proprietary Micro Channel Architecture (MCA), which is also lacking in add-in boards now, although many companies are working on them. Due to the uniqueness of these buses, expansion boards, when they do appear, will be more expensive than comparable boards for older DOS systems.

IBM claims the MCA will yield more and more benefits to the user as parallel processing and other computer hardware advances become standard fare in the next five years. The Mac NuBus is also a supple and powerful base for addins. Like the Apple NuBus, the MCA bus will automatically configure itself to new add-in boards, bypassing the complex switch-setting of previous PC generations and making the Model 80 easier to set up than older systems.

On the back of the standard Model 80 are serial, parallel, keyboard, and mouse ports. The mouse port is new to the PS/2 line, and indicates IBM's intention to eventually make a graphic, mouse-driven interface standard on its systems. The Macintosh II has printer and modem ports, a speaker connector, and two ADB (Apple Desktop Bus) ports for connecting the keyboard and mouse. All the Mac II ports use the same jacks and peripheral devices as the Mac Plus and SE, rather than the standard D-connectors

used by serial and parallel devices in the PC-compatible world.

CONNECTIVITY AND COMPATIBILITY

The AppleTalk network makes it easy and very cheap to hook up the Mac II to existing LaserWriter printers and other Macs for such purposes as E-mail, file sharing, or shared printing. The PS/2 is





The PS/2 Model 80 CPU (top right), which weighs in at 40 pounds, is designed to stand on the floor, with only the unit's keyboard and monitor claiming desk space.

The Mac II CPU (above) has a built in SCSI port, two serial ports, a pair of Apple Desktop Bus connector ports, and an external four-voice sound port.

not yet a potent network machine because few network add-in boards are available for its bus, but these will undoubtedly appear in the next year. Even then, they will cost several hundred dollars, while Apple's AppleTalk connector is built into the machine. IBM network adapter cards, however, will offer much faster network performance than the AppleTalk connectors. For those wanting a faster Mac network. Apple markets its \$699 EtherTalk board for the Mac II, which lets it run over the faster Ethernet cabling and connect to PCs, VAX minicomputers, and workstations. And with AppleTalk boards now available for older MS-DOS machines, an AppleTalk connection for the PS/2 MCA bus can't be far away.

Along with local area network file sharing, the Mac II offers other links to the MS-DOS world. The PC 5.25 drive from Apple (\$528 with adapter card) gives you a 360K, double-sided, 5.25inch, floppy disk drive, a plug-in controller board for the Mac II, and some filetranslation software for converting Mac files to DOS files. Together, these devices allow you to move most document files (including text and DCA files) from Mac systems to DOS-formatted 5.25inch disks. Unfortunately, this doesn't help you move files to the 3.5-inch floppy used by the PS/2 or DOS laptop computers, unless you have access to a PC system with both 3.5-inch and 5.25-inch floppies or you have a PC file-movement utility.

SOFTWARE ACCESS

The Mac II will also be able to employ DOS-compatible add-in boards offered by other manufacturers. These are essentially 286-based AT compatibles on a board that will allow the Mac II to run DOS software. The Model 80 doesn't

BOTTOM L • I • N • E

similarly equipped PS/2 Model 80 is more expensive than the Macintosh II, but cheaper peripherals may make that difference less significant if you expand your system in the future. For most comparable applications, the performance of the two machines is very similar.



Apple's Extended Keyboard (right), the PS/2 unit (left), and the basic Mac model (center).

hold out this sort of possibility, since there are no Mac compatibles.

The Mac II will run many programs from previous Mac generations without any change. The major Mac programs—Word, PageMaker, and Excel, for instance—run on the Mac II. Other programs may have minor difficulties, or may freeze the system. Most developers with programs that aren't Mac II compatible have either shipped or will soon ship compatible versions. Many programs, of course, don't yet employ the Mac II's color. A few programs have emerged in Mac II versions that won't run on previous Macs.

Software compatibility isn't a problem at all on the Model 80. That is, you can use the same DOS on the Model 80 as on previous PCs, and run the programs that DOS handles, such as Word, WordPerfect, 1-2-3, and dBase. Add Windows, and you can run PageMaker and the new PC version of Excel. OS/2 promises to give some multitasking and task-switching capability to the Model 80, but the only commercial program available in an OS/2 version when I was spinning my Model 80 around the block was Living Videotext's ThinkTank.

HOW TO CHOOSE

Since price and speed are so similar, how do you choose between these two high-performance vehicles? The three major criteria are software availability, training considerations, and ongoing costs. The Model 80 has the huge DOS library at its disposal, including many vertical market programs, databases, and CAD programs not available on the Mac. The Mac repertoire is clearly smaller, but it has some outstanding programs that match or even exceed their DOS counterparts. The Mac II can use most of the applications that have sprouted for the Mac family in the past four years, as well as a few new programs in the graphics and CAD realms. Because of the Mac II's horsepower, several developers of workstation programs, such as the Interleaf desktop publishing system, are bringing their products over to the Mac platform.

The Model 80 is significantly easier to set up and use than its DOS ancestors, but the Mac II still has the edge in ease of use because virtually all Mac programs are written for the same menudriven interface. It will take some time before OS/2 and Presentation Manager foster the same consistency of software interfaces on the Model 80.

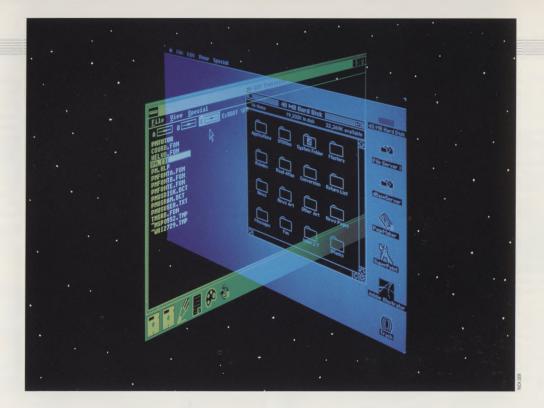
As for ongoing costs, you have to look at service and the price of expansion. As mentioned before, Model 80 peripherals are likely to be considerably cheaper than Mac II peripherals, although the initial MCA add-in boards are expensive.

A USABLE MAC II

If you choose the Mac II for your desk, be sure to get it with the color monitor, the enhanced keyboard, a 40MB hard disk, and at least 5MB of RAM. Less than that and you're working with a powerful car that is missing the instrument panel, gas tank, and spark plugs. Make sure you have the latest versions of whatever software you use, and check with each program's manufacturer about compatibility, including any small bugs that might be merely annoying if you know about them, but could blind-side you if you don't.

Use the MultiFinder to take advantage of the RAM memory, and find a convenient way to back up the hard disk, such as a tape drive. The Mac floppies hold so little that you will be constantly swapping disks if you attempt to back up to floppies.

Phillip Robinson is a former engineer and technical writer. He publishes the newsletter, Desktop Engineering News.



WHERE WORLDS MEET:

Microsoft Windows Crosses the Finder's Path

BY JOHN RIZZO

hen word of Apple Computer's lawsuit against Microsoft Corp. hit the wire services, newspapers began printing screen shots showing similarities between Apple's Finder and Microsoft Windows version 2.03. This latest version of Windows is said to be the prototype of Microsoft's Presentation Manager windowing environment for the new IBM OS/2 operating system. Although Macintosh users applauded the limited multitasking abilities of the Mac's System 5.0, the release of Windows/386 and the lawsuit have renewed some old thoughts: If Apple itself is worried about Windows, should I put off those Mac purchases and consider a PC instead? After examining the two systems side

by side, it can safely be said that the Macintosh is still the way to go for those who want a graphical interface.

If Apple Computer itself is worried about Windows, should you put off those Mac purchases and consider PCs instead?

Features compared

Some hardcore DOS fans will never feel at home with any windowing interface, claiming that a mouse and scroll bar could never equal the power of the DOS prompt. This

article will do nothing to change their minds. For the rest of us, who have experienced the productivity enhancements of a graphical interface, Windows/386 2.03 has several things going for it. For one, it is much smoother than Windows 1.0. It streamlines certain DOS tasks, such as moving and renaming files, and makes heavy use of a mouse and pull-down menus. It still has a long way to go before it matches the simplicity and intuitiveness of the Finder, however; the user still has to know something about DOS.

Big improvements over older versions of Windows include overlapping windows and new methods of resizing them. Windows puts a menu bar at the top of every window, so there is no desktop, but many window manipulation tasks are done exactly as they are in the latest version of Finder with MultiFinder. To move a window, you grab the title bar and drag it. Double-clicking on a document or applica-

tion opens it. You can cut and paste or switch between two applications without having to quit, by clicking on an open window. An advantage over same name when you click on them: MS-DOS Executive

Copying files onto a hard disk or between folders is still much easier

with the Finder, although the new Windows is a productivity improvement over the DOS prompt (again, veteran DOS users might disagree). To move files between directories (folders on the Mac) in Windows,

you select Copy from the File

menu. A model

message window then comes up. You must type in the full path of the destination directory (for example, C:\WIN386\PM), and then delete the old copy. Although pressing Shift and

MS-DOS Executive

C: \WIN38

S-DOS Executive

as floppy disks when reduced to icons.

(2) Windows can appear as icons only with window closed.

In Windows, disks and directories all appear

MS-DOS Executive A C C: WIN386 WORD Copy: WDEMO.DOC Io: A: \RGFT\WOR OK Cancel POSTSCRL.INI TYPOS.DOC POSTSCRL.PRD WDEMO.BAK In Microsoft's Windows, the Copy window is used to move a file. The file

path must be typed in the lower space, and the old copy must be deleted.

Finder 6.0 is that you can open a document by double-clicking it when its application is already open-Finder forces you to use the Open command in the File menu. The word at press time was that Apple would correct this in an upgrade due this month. Windows maintains the directory

metaphor of DOS in lieu of the Finder's folders. The first window gives you a text listing of files and directories. As with folders listed by name in the Finder, double-clicking a directory name opens a window with a list of the files and subdirectories it contains. The original window disappears, however, unlike the one in Finder. To have windows open for two directories (which would be like having two folders open on the Mac), you double-click on the Windows WIN386.EXE or DOS EXE file, then double-click on the directory you want to open.

Windows' icons for disk drives must be created by the user and are not

very practical. The Finder automatically puts volume icons in the upper-right corner of the screen. In the Microsoft package, windows can be reduced to icons by clicking on a down arrowbut the window closes. You can get icons for different disk drives

While the actual multitasking of Windows is well-implemented, its management of RAM falls behind the Finder's.

get icons for different disk drives by creating a new .EXE window as described above and clicking on a drive figure in the window. Icons for drives and documents are treated equally, however, and are all put in the lower left corner of the screen outside of all windows (which cannot contain icons). In addition, icons are not labeled unless you click on them, and only one icon label can be displayed at a time. Icons for disk drives and directories all look identical and have the

Larry, John, Steve, and Bruce ©1987 Apple Computer, Inc. Finder: 6.0 System: 4.2 2,048K Largest Unused Block: 304K Total Memory: Microsoft Excel ****************** 272K 4th Dimensio... 600K MacWrite Finder 160K ***** MultiFinder's About Finder window lists the memory allotted to and used by each open application—useful information for changing allotments.

□**■** The Macintosh™ Finder **■**

tiple files that are alphabetically adjacent, you must Shift-click on indi-

vidual names if they are not adjacent. In the Finder, you can draw a box around icons to select them. To install certain programs on a hard disk and have them work with Windows, vou must deal with setting up program information files (PIFs) and editing the WIN.INI file, a main Windows system

file. All this is a

far cry from the simple click-and-drag copying of the Finder.

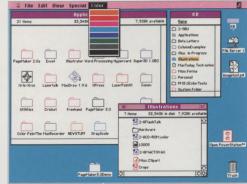
Windows text fonts are still slightly more ragged-looking on screen than are fonts on a Mac, but this has more to do with the graphics hardware and DOS than with Windows. There are several good illustration programs

(4) Files can be recovered from trash can only before

an application is opened.

available for DOS, but graphic created in a Windows program cannot be pasted into a non-Windows DOS application. Although it has a Control Panel that lets you change the colors on your screen, Win-

the down arrow key will select mul- dows lacks the Finder's Color menu, which lets you color different files for organizational purposes.



The Finder can show contents in three basic ways: icon, small icon and name. One way to group files is to color them using the Color menu.

Multitasking, managing memory

Multitasking is one feature of Windows/386 that is superior to the Finder. In fact, this is the best thing Windows/386 has going for it. All programs that are compatible with Win-

dows can run in the background while another application is running. Macintosh programs must be specially tailored by the manufacturer to take advantage of multitasking. Currently, many Mac applications have not yet been updated and merely stop running while in the background under MultiFinder.

While the actual multitasking of Windows is well-implemented, its management of RAM falls behind the Finder's. The 80386 creates a 640K virtual microprocessor in RAM for every Windows application that is open. With a 2MB machine, this limits you to about two or three open applications. Since many applications don't require 640K, you may want to reduce the allotted memory for each. You can do this with Windows by getting into the PIF files. Unfortunately, the manual doesn't help much in offering hints to streamline the process

Finding the optimum amount of RAM is much simpler with the Finder, which begins with a different default memory allocation for each application. To change this allocation, you choose the Get Info option for an application while in MultiFinder and type in the amount of RAM you want dedicated to it. If you have not allotted enough memory, a mes-

	Finder 6.0/ MultiFinder 1.0	Windows/386 2.03
Price	free with Macintosh	\$195
Jpgrade cost	\$49.95 with System upgrade	\$95 (MS-DOS extra)
Click-and-drag copying	V	
Pull-down menus stay open		V
Open file on another disk from within an application	V	
Open file by double-clicking with application open	(1)	V
Close window box	single-click	double click
cons for mounted disk drives	automatic	manual (2)
Windows retain position and size	V	
Multitasking	certain applications	most applications
con view of folder/directory contents	V	
File search utility	~	
Desk accessories	V	(3)
Color for file names/icons	V	
Narnings before replacing ites with same name	V	
Frash can or ability to ecover discarded files	✓ (4)	
Ability to delete folder or directory containing files	V	

sage pops up when you try to start the application. The Finder also aids the memory management process by giving you a listing in the About the Finder DA of how much memory each ap-

Ordinary tasks can be done faster and more productively with Finder than with Windows, and Finder users have more software to choose from.

plication is taking up. No such utility is provided with Windows.

The Finder can be set to open automatically a set of applications and desk accessories upon start-up. Once again, Windows requires you to modify lines of code in the WIN.INI file to accomplish this. Also, Windows loses window sizing and placement when you close an application. The Finder retains this information.

Speed

One of the biggest faults of Windows is its slowness. Most everything you do

ile <u>V</u> iew <u>S</u> pecia	1	PMake Edit	r - C:\WIN386\PM\PD
<u>S</u> hort	WIN386\WORD	-	
√Long	536 9/03/87	Zalli A Shar	
P288	536 9/03/87	7:16	toolbox
YPH ✓ <u>A</u> ll MCAP Partial	072 9/03/87 256 4/14/88	7:16 2:59	
	368 9/83/87	7:16	
AKEP Programs	450 9/03/87	11:12 ph	
EMO JBy Name	640 9/03/87	7:16	
	007 9/03/87	7:16	
DUSE By Date By Size	325 4/07/88 006 9/03/87	2:53 Finder	_ 1 dimension in Mac 4
Bo Kind	90 4/14/88	1: 48 ural p	1 4, 28 three 20, 114by
Pun Co	e768 9/11/87	2:23 Fining	Binato you Gran a
	1024 9/03/87		
	0434 9/03/87 6350 9/03/87	11:14 to tak	Belleville 11111 4
	0434 9/03/87	11:14+ h file	
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logged on. [W	HAT IS A "LARG	E NUMBER?	Mariani Imigless
server but a dis	k server which partit	ions volumes fo	r ← →

Above are file names in Windows' long tormat. The short tormat shows file names only; they can be listed alphabetically or by date, size or kind.

with a mouse, from highlighting text to moving graphics elements, is noticeably slower than with the Finder.

To compare the two systems, I set up two "equivalent" systems, a Mac II and a COMPAQ Computer Corp. DeskPro 386, both of which use 16-MHz, 32-bit processors. Both computers had 2MB of RAM, color monitors and 40MB hard disks. The Mac was loaded with System 4.2, Finder 6.0 and MultiFinder 1.0, and the COMPAQ with DOS 3.31 and Windows/386 version 2.03. I measured the time of some typical user activities, such as opening documents and scrolling text and graphics. I found Windows 30 to 40 percent slower, on average, than the Finder.

Software compatibility

A big advantage of the Finder is that more software is specifically designed to run with it than with Windows. Basically, all Macintosh software is designed for the Finder. Windows does

Comparative Task Times (in seconds)					
	Finder 6.0 on Macintosh II	Windows 2.03 on COMPAQ DeskPro 386	Percent Windows slower than Finder		
Cold start-up	27.4	43.0	56.9%		
	Page				
Scroll Horizontal	6.3	9.1	44.4%		
Scroll Vertical	6.4	7.5	17.2%		
Switch page	10.2	12.8	25.5%		
	Microsoft Word	Microsoft Write			
Open word processor	4.9	9.3	90.4%		
Scroll text	27.2	31.9	17.4%		

These tests measured the time each system took to accomplish common mouse and screen-drawing tasks. The files were created on the Mac and translated to the COMPAO. The PageMaker document contained both graphics and text. In the scrolling tests, both windows displayed the same number of lines on screen. On average, the Windows system was 42 percent slower than the Mac with Finder.

not yet have a major word processor designed to take advantage of its environment. Microsoft's DOS version of Word, for instance, does not use scrolling windows or pull-down menus: it runs as if you didn't pay the \$195 for Windows. The big boys of the DOS world, such as Ashton-Tate Corp. and Lotus Development Corp., do not yet support Windows, although Autodesk

Inc. says its popular Auto-CAD will support Windows in a future release.

Although all Mac software is designed for the Finder, Finder 6.0's MultiFinder mode does have compatibility problems. For instance. the Font/DA Mover and some third-party and public domain utilities won't work cor-

rectly unless in single Finder mode. Microsoft Excel has some problems loading large files in MultiFinder. ACIUS Inc.'s 4th Dimension works with MultiFinder most of the time, but sometimes switches from the user

mode to the design mode. Most of these problems are being corrected in revisions by the software vendors.

Windows comes with a variety of low-end software applications, including a MacWrite clone called Write

and a MacPaint clone calledyou guessed it— Paint. Write is adequate for simple writing tasks, but Paint is so rudimentary and clumsy you could do more with MacPaint 1.0. If you have to do any drawing in Windows, you'd be better off spending the money for a useful program such as Z-Soft Corp.'s PC Paintbrush Other free

Windows utilities include a calculator, notepad, print spooler, calendar and rolodex card file. If you think these sound similar to the Mac DAs, you're right—but since they're applications they are not conveniently available from within any window as Mac DAs are. Borland International Inc.'s Sidekick is a RAM-resident DOS application that acts like a set of DAs, but you

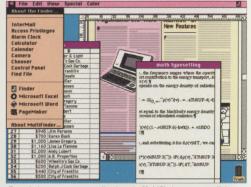
Windows*

can't add new utilities to it from other sources as you can with the Finder. Unfortunately, Sidekick is not compatible with Windows, according to Borland.

Windows and Finder face off

here are many reasons to buy a Mac II, and many to buy a DOS-compatible 80386 machine. Those seeking a simple, consistent graphical user interface across all applications, however, should stick with the most recent Finder/MultiFinder incarnation. Users of Windows must be DOS-and-Windows savvy, which translates into a training period for novices. Ordinary tasks can be accomplished faster and more productively with Finder than with Windows, and Finder users have more software from which to choose.

Mac users have some peeves against MultiFinder—such as open windows covering the Trash or the inability to launch files directly from the desktop when their applications are open—but these are minor inconveniences compared to the relative lack of features and clumsiness of Windows. Highpowered users who require the multitasking of many applications may lean towards Windows/386 2.03, despite



To switch among open applications in MultiFinder you can click on a window, click on the MultiFinder icon or choose from the Apple menu.

its memory management limitations. These people should consider other alternatives first, however, such as the Desquiew (Quarterdeck Office Systems) or PC-MOS/386 (The Software Link Inc.) PC environments, or workstations running UNIX, VMS or other multitasking operating systems.

Windows 2.03 is much improved since its original release, and it is likely to continue to improve despite Apple's lawsuit. Presentation Manager for OS/2, purported to be modeled on Windows 2.03, may present some nice features, but will not run DOS applications. On the other hand, Finder, which is already several years ahead of Windows technologically, is also improving. This month's upgrade is expected to eliminate most of the commonly noted inconveniences of MultiFinder, offer more features for Mac IIs and 16bit Macs and enhance overall performance. (See Macintosh Today, April 19, 1988, Page 10.) All in all, the Finder is in no danger of losing its position as the leading graphical interface, setting the standard for the industry.

 Page layout
 11
 5

 Drawing/illustration/CAD
 47
 12

 Word processors
 12
 2

 Spreadsheets
 8
 2

 Database management systems
 22
 3

 Electronic mail
 8
 2

 *Windows information was provided by Microsoft.
 2

AVAILABLE SOFTWARE

Finder

Figures represent total numbers of programs available, in several popular categories, that run in the windowing environments. Software in beta test, packages not currently shipping and Macintosh desk accessories are not included. Figures on Windows provided by Microsoft Corp.

JOHN RIZZO is technical editor at Macintosh Today.

HWEEK

THE NATIONAL NEWSPAPER OF IBM STANDARD MICROCOMPUTING

Mac vs. PC: Comparing the Long-Term Costs

By Jim Leeke

aving introduced benignly appealing smiley-face and trash-can icons into the button-down world of corporate microcomputing, the Apple Macintosh is now convincing users that it is affordable as well as friendly.

Macs can be cheaper to own and operate over their life cycles than comparable PC-DOS machines, according to many users

and industry analysts. As proof, they point to an advantage the Mac has always held over IBM PCs: ease of use.

The Mac's mouse, graphical user interface and simple command structure all reinforce the belief that it is more accessible to average users than the PC. Greater accessibility means lower costs for training, which in turn lowers costs for support.

But along with many other observers, Jack Baumann, of Hughes Aircraft Co., of Long Beach, Calif., believes that any long-term cost benefit stems mostly from an additional factor -the consistency of the Mac's interfaces. "Once someone does learn one or two of the Macintosh software applications," said Mr. Baumann, manager of end-user consulting services, "there is a lot that can be carried from one to another."

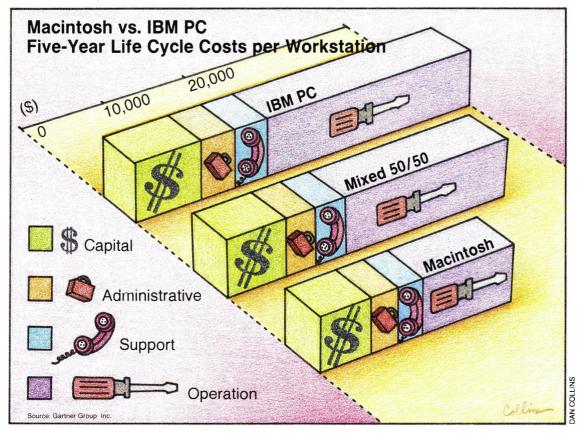
One organization that has saved support dollars due to less need for training is Seafirst Bank in Seattle, which in 1985 began installing hundreds of Macs in branches across Washington state. A pioneer Macintosh user among financial institutions, Seafirst quickly realized that Mac software-training classes then being provided by an outside vendor were largely unnecessary, and so dropped them.

The bank has since relied on what it calls "paratrainers"—employee software gurus borrowed from other duties to train their

Mac's Ease of Use May Reduce Cost of Training and Support

colleagues on Mac programs. Because of the consistency of Mac interfaces, even classes for the paratrainers are not particularly well attended, according to Robert J. Bowman, a Seafirst vice president and IBM PC ATs; it later updated its figures to say that Mac SEs are 23 percent cheaper over that same period than IBM's popular new PS/2 Model 50s.

Various PC-related equipment and sup-



A Gartner Group study compared the costs of IBM's PS/2 Model 50 and a similarly equipped Apple Mac SE.

manager.

Such accounts of the cost benefits of Macs are bolstered by independent and Apple-commissioned reports. One example: According to a private, 70-page study compiled last year by the Gartner Group, and now publicly available, Macs are measurably more affordable over the long term than comparable IBM machines.

The Stamford, Conn., consulting company initially calculated that Mac Plus machines are 28 percent less expensive over a five-year period than comparably equipped

port costs were factored into the study. Although initial IBM hardware and software prices were higher than Apple's, capital and interest expense accounted for little more than one-quarter of total life-cycle costs, according to Gartner; the Mac's chief cost advantage actually was the time savings attributable to ease of use.

(The narrowing of the gap from 28 to 23 percent was partly due to declining IBM hardware prices, said Patricia Woo, a Gartner research analyst. The larger factor here, however, was that Mac software "is

FEATURES PC WEEK

now as expensive as PC software." But Ms. Woo still expected the gap to remain in the 20 to 25 percent range for some time.)

Since the life-cycle cost of a PC is more than \$18,000 per user, according to the study, such projections represent potentially tremendous savings. Gartner calculated that in a company with 600 users—evenly divided between Macs and PCs—"the fully burdened, five-year life-cycle cost per user is 10 percent lower than in an all-IBM shop, saving \$1.1 million." Savings in an all-Mac shop are higher—\$2.5 million, or nearly \$4,200 per user.

But micro managers hesitate to apply numbers like that directly to their own organizations. They are cautious about the numerous variables involving different companies, computing environments and the general reliability of research itself.

Some managers, including Robert C. Southee, chief of the design and graphics division, office of the secretary, U.S. Department of Commerce, are openly skeptical; a five-year cost projection for a 4-year-old machine is "pie in the sky," said Mr. Southee, whose Washington office supports both Macs and PCs. "Five years ago, the Commodore 64 was still a marvelous machine."

Trish Fineran, president of Task Inc., a Drexel Hill, Pa., consulting firm, also cautioned that while such figures as Gartner's are "exciting," they should be considered in the light of two key questions: How must a company use its Macs in order to duplicate those cost benefits, and what is the impact on its computing environment should it succeed?

"'Cheaper-to-use' doesn't mean anything," she said, "if it doesn't have the impact I want."

And some managers also point out that Mac-vs.-PC figures can be unfair, like comparing those proverbial apples and oranges. In broad terms, PCs are more often used for spreadsheets and word-processing, Macs for graphics and engineering; many organizations need both machines, and so it isn't really a matter of choosing one over

the other. Said Commerce's Mr. Southee: "We use them both for the applications that they are best for."

But Mac supporters are numerous and vocal, and quick to cite a second Mac study that also sparks both interest and debate. It was conducted by Peat Marwick Main & Co. for Apple's National Accounts division, and went beyond Gartner's accountledger approach and into the broader and more nebulous area of productivity. Here, too, the projections were eye-catching.

Peat Marwick, a New York-based accounting and management-consulting firm, concluded that the Mac's ease of use promotes increased computer use; this is true not only among novice and casual users, but among power users as well. "By increasing computer utilization broadly, productivity can increase dramatically," said the study, which was released last May.

This point was amplified in a case study involving a large government contractor. Among 42 "knowledge workers"—white-collar employees who averaged more than 13 years in the industry and who had "competing technology" available for more than five years—productivity jumped 24 percent once Macs were installed.

Although the unnamed target company itself chose to use a more conservative figure of 20 percent, after viewing the data it decided to equip an entire 300-person department with Macs, according to the study.

Projections of a one-fifth jump in worker productivity quickly catch corporate attention. But Task's Ms. Fineran again cautioned that figures like these can't be projected blindly onto other organizations; Peat-Marwick's 20 percent figure, after all, derived from a particular use of the Mac in only one organization. "Greater use does not necessarily lead directly to greater productivity," she said. "It depends on what they use it for."

Mark Major, a computer consultant in Manchester, N.H., agreed, even though he usually chooses a Mac over a PC for his personal work. "Just because they come up

with a study that says the Mac is more productive . . . I wouldn't say 'Let's go out and get Macs and fill the company up with them,' "He said. "I'd do my own analysis."

Still, many managers support both studies' conclusions. Gartner's "seems reasonable" to Hughes' Mr. Baumann, and both appear "pretty accurate" to Elizabeth Dunn, information analyst at Eli Lilly, in Indianapolis.

"I don't think we've seen anything here that would contradict" the Peat Marwick percentages, agreed Seafirst's Mr. Bowman.

Like Mr. Major, Mr. Bowman has a choice between two machines, and finds his productivity "very much higher with the Mac than with the IBM, [because] I don't

have to think about the user interface.'

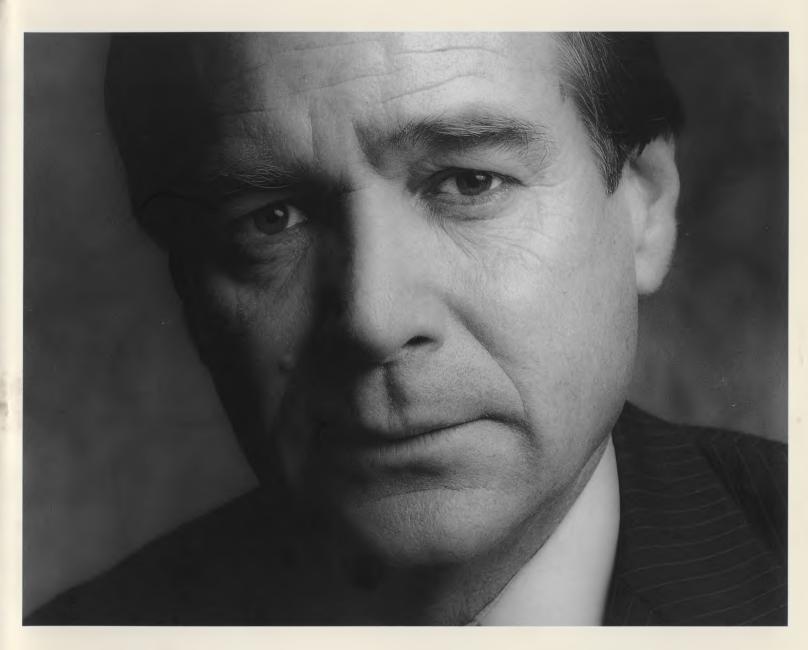
Even Mac enthusiasts acknowledge that Apple may not hold its edge, however. The hardware and software price gap already is narrowing. Similarly, IBM has begun slowly whittling away at the Mac's ease-of-use advantage with PS/2 models introduced last year.

A consistent, Mac-like interface via Systems Applications Architecture and OS/2 Presentation Manager "eventually could yield costs savings similar to those of the Mac," according to Gartner, which estimated in November that such applications were at least two years away.

Although they have made a definite dent in the market, Macintoshes have not overwhelmed the DOS world. Consultant Mr. Major, who occasionally shows studies similar to those by Gartner and Peat Marwick to clients already invested in DOS machines, sees little eagernes⁶ "to rush out to the Mac technology."

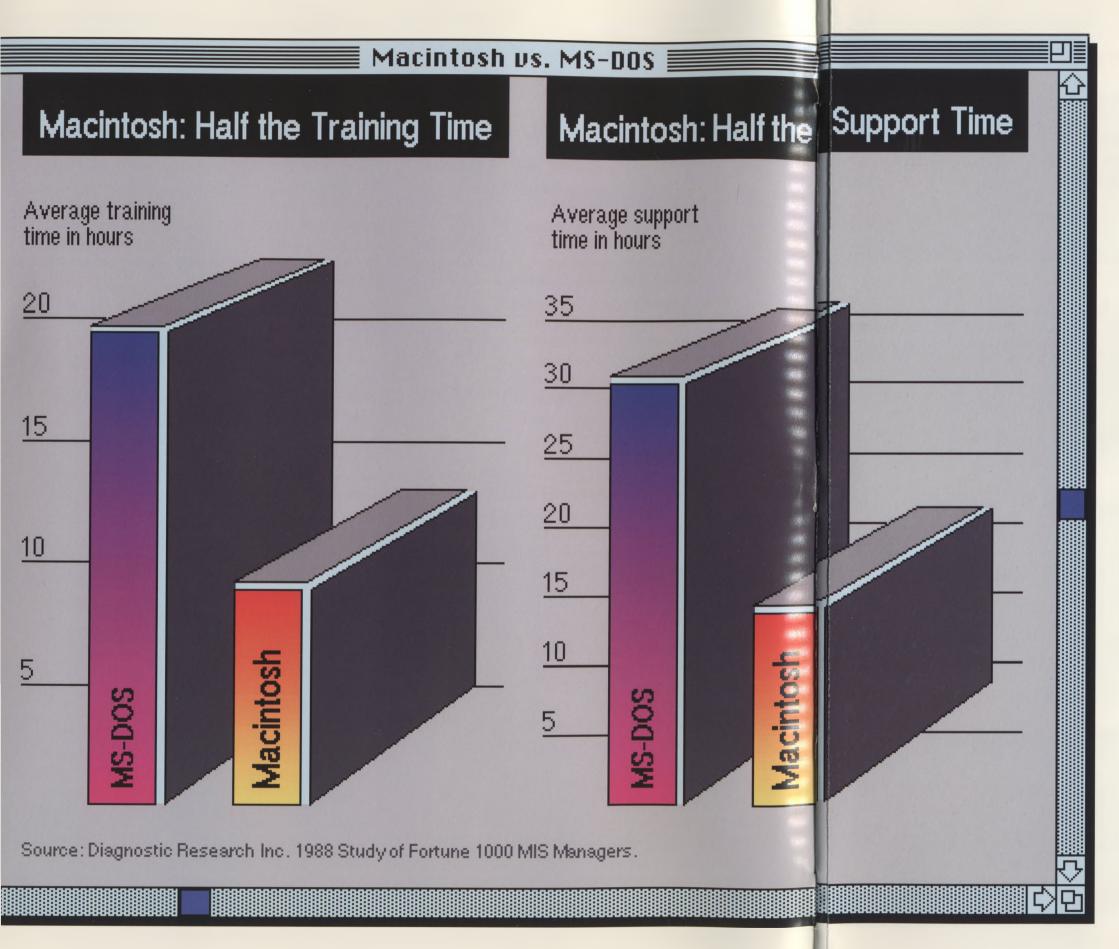
But in many places the Mac definitely does have impact. Hughes, for instance, has "fallen in love with the Macintosh, primarily for the graphics," according to Mr. Baumann. And in 1987, the aircraft maker bought more personal computers from Apple than from any other vendor—something that had never happened before.

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"I want a computer that makes me better at what I do.

And I don't do computers."



Do better.

Whatever you hope to accomplish with a personal computer, you'll accomplish it sooner with a Macintosh*

That's a fact to which hundreds of thousands of businesspeople in finance, marketing, sales, publishing, engineering, and design can attest.

In these and scores of other areas, managers report that they and their coworkers have become computer literate in hours instead of weeks. And proficient in using half a dozen applications instead of just one.

They've seen productivity soar by as much as 24 percent, with a corresponding improvement in the quality of work produced. Because people spend more time focused on their work—and less time frustrated with their computers.

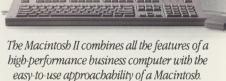
But at the same time, there is one thing Macintosh is driving down—training budgets. Because managers find that people can accomplish more and more on a Macintosh computer with less and less help.

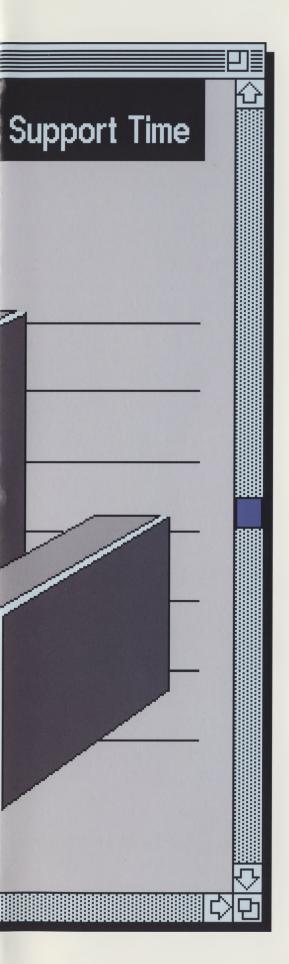
What makes all this possible is that Macintosh computers were designed to work with people. And the way people work with Macintosh begins with the now-famous mouse.

As you roll it across your desk, you can select and perform the most complicated of computer operations by performing the simplest of manual operations—pulling down a menu, pointing at a command, and pushing the mouse button.

In fact, the Macintosh mouse has

proven so simple to use—and so useful—that nearly every other business computer now seems to be sporting a mouse of its own.





But Macintosh is a lot more than just its mouse:

It's a computer designed so that you can use it just the way you use things on your desk. With documents you can open, read, edit, close, shuffle, file, work with, and throw away—all with hardly a glance at the instruction manuals.

It's a sophisticated machine with a high-resolution display that lets you communicate using graphics as easily as other computers let you communicate using words and numbers.

It's a single set of computer skills—all that you need to use any Macintosh program, from word processing to financial analysis to graphic design. Master one application and you've got a good

grasp of them all. Because all Macintosh programs work the same basic way.

It's a multitasking operating system called MultiFinder™that lets you do several things at once. So you can

print one document at the same time you're creating another.

It's a whole system packed into a few components that you can assemble in minutes. So you can begin productive work right away.

Macintosh gives you both stateof-the-art computing *and* a simple way to get at it. And you get all this only with Macintosh.

But that's not all.

Because you also get a family of business computers that work in the same sensible, intuitive way. Which means you can get just as much Macintosh as you need today—along with the flexibility to add more computing power as your

Macintosh in Arthur Young

"The Macintosh has made us more competitive.
We also feel we can be much more productive with
the Macintosh. It has helped us provide better
service in a more price-competitive environment
without sacrificing quality."

Chris Veal, General Partner

Macintosh in Della Femina

"The Macintosh
has allowed us to take the lead with our clients.
We can service our clients better because we can
provide them with more useful, better quality
information in a shorter amount of time.
Our clients have raved over the results."

Patrick K. Adams, Senior Account Executive Della Femina, Travisano & Partners

business grows.

All while maintaining your investment in software, training, and your company's vital records.

When you put Macintosh to work in your business, you'll find it does everything you expect a personal computer to do.

Only better.

Macintosh in General Electric

"For integrated text and graphics, you can't use any other computer. The professionalism of anyone who uses a Macintosh is increased substantially."

> Price Collins, Program Manager General Electric

Macintosh in ARCO

"We produced more
in less time with less people than the year before.
What took four hours to produce a graph
on the host took four minutes to produce a custom
graph on the Macintosh. We re-invest the time we've
gained in producing higher quality product."

Glen Arcenaux, Product Specialist
ARCO

Macintosh in Lockheed

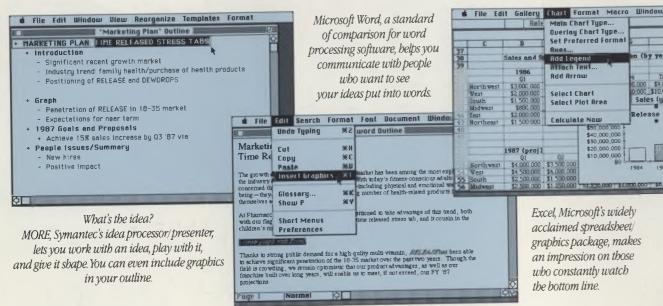
"With Macintosh,
you don't need to spend a lot of time training people
on each new piece of software. Consistency in
software allows you to learn more applications
quickly. That makes us more productive."

Ron Dotson, Manager, Structural Dynamics Division

Lockheed Missiles & Space Co.



Macintosh. The difference between making a picture and making a point.



Great graphics alone never sold a business proposal.

They certainly can make ideas easier to grasp, but it's really the logic behind the graphics that makes your ideas fly.

So if you're preparing a proposal or presentation, it makes sense to put your efforts into your points as well as your pictures.

With Macintosh, none of this is terribly difficult, because there are a number of powerful programs—such as the ones shown here—that make it just as easy to work with ideas as with pictures.

These programs represent the state of the art of point making.

Today, for example, you can collect your thoughts into a cohesive idea, turn that idea into a plan, chart its financial feasibility, state its benefits in plain English, and deliver your message with dramatic visual clarity—all while sitting at your desk. And in a lot less time than you'd expect.

But while you may select half a dozen computer programs to make your point, vou'll only have to use one set of computer skills: the same point-and-click operations we mentioned earlier.

And, thanks to the sophisticated MultiFinder system software that comes with Macintosh, you can even run several programs at the same time.

So you can devote all your energy to working on your work. Instead of working on your computer.

Of course, once you have a clear picture of what you want to say, there's no better system than the Macintosh to help you say it.

And no better way to produce it than with Apple Desktop Publishing, which puts the capabilities of a design studio, a type house, and a print shop right on your desk.

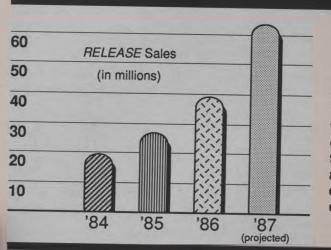
If all that sounds complicated, relax. An Apple Desktop Publishing system requires as few as three components: a Macintosh computer, an Apple® LaserWriter* printer, and your choice of desktop publishing software.

aaaaaaaaa Marketing Plan RELEASE STRESS CAPLETS

Executive Summary

The explosive growth of the multi-vitamin supplement market has been a phenomenon in the industry over the past eighteen months. Today's fitnessconscious adults are more concerned than ever about total body healthphysical and emotional well-being—and they're purchasing an ever-increasing number of health-related products for themselves and their families.

At Pharmaco, we believe we are uniquely positioned to take advantage of this trend, both with our flagship adult product, RELEASE timed-release stress caplets, and its cousin in the senior's market, MATURE.



Thanks to strong public demand for a high-quality multi-vitamin. RELEASE has achieved significant penetration of the 18-35 market over the past two years. Though the field is crowding, we remain optimistic that our product advantages, along with our reputation, will enable us to meet, or exceed. our FY 87 projections.

In 1987, we propose an aggressive, three-pronged marketing plan to leverage our current market position, with a goal of increasing sales by a total of 15 percent over the next three quarters.

- Field Service Representatives. We are committed to improving the quality of training that our Field Service Reps receive. This will be accomplished through a new, intensive training program to take place at the recently completed training facility located at our corporate headquarters.
- Advertising. A new, \$2.5 million corporate image campaign will supplement our traditional advertising. Ads will be targeted to doctors and pharmacists, as well as consumers.
- Point-of-Sale Promotions. In-store rebates and promotional events are planned at selected times during the yearly buying cycle. These will range from traditional money-back coupon offers to contests and sweepstakes.

We have also, over the past twelve months, been able to bring in the most important asset to any company's marketing plan: people. We are pleased to say that during this otherwise recessionary period in our industry, we have strengthened many of the key positions in our Marketing and Sales organization. We look forward to meeting our goals with them in 1987!

Product Description

RELEASE STRESS CAPLETS

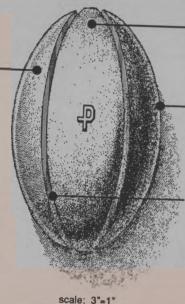
Overview

RELEASE timed-release stress caplets are high-potency multi-vitamins that are designed to supplement the body's natural energy production to meet the demands of today's vigorous lifestyles. The vitamin and mineral agents in the caplets are time-released for maximum efficiency over the course of a

RELEASE is manufactured under strict quality-control procedures in our newly expanded Northwest plant, maintaining the consistency and purity for which we have always been known.

RELEASE meets or exceeds the recommended daily allowances (RDA) set by the FDA for the following vitamins and

Vitamin or mineral	% of RDA
Vitamin A (Fish Liver Oil)	250
Vitamin B-1 (Thiamine)	3333
Vitamin B-2 (Riboflavin)	3000
Vitamin B-6 (Pyridoxine HC	2500
Vitamin B-12 (Cob Conc.)	833
Vitamin C (w/ Rosehips)	208
Vitamin E	250
Vitamin D (Fish Liver Oil)	125
lodine (Kelp)	50
Iron (Amino Acid Chelate)	41.5
Zinc	666



RELEASE is sold only in caplet form to respond to the public's expectations for a safe, tamperproof multi-vitamin.

RELEASE's patented ■ TolerEase® microcoating makes the caplet easy to swallow and causes no stomach discomfort.

A unique under-layer contains RELEASE's special flavor ingredients, giving the caplet a pleasing taste. Inside, the vitamin agents are timereleased for continuous delivery to the body over a 24-hour period.

To meet the usage demands of today's varied demographic markets, RELEASE comes in a variety of sizes: the 6 oz. starter size, containing 50 caplets; the 12 oz. economy jar, with 100 caplets; and the jumbo family pack, containing 1500 caplets.

All three sizes come with tamper-proof lids and sealed boxes for the maximum in consumer safety and protection.



12 oz. (50 CAPLETS) (100 CAPLETS)



(1500 CAPLETS)

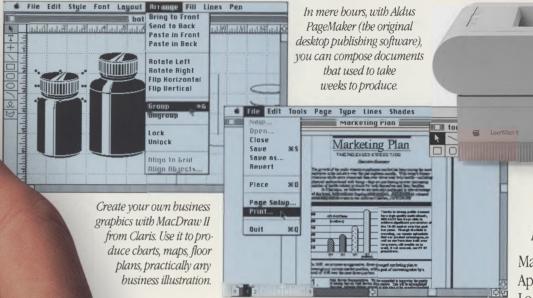
Jumbo Pack

As our example to the left shows, detailed illustrations and sophisticated page layouts are just two ballmarks of the second generation of Apple Desktop Publishing systems. By adding extra disk storage, scanners, and advanced desktop publishing software, you can cut design time as easily as you can shrink production costs.

Tust as there is a family of Macintosh computers, there is also a family of LaserWriter printers.

So you can choose from our personal printer, the LaserWriter IIsc; our networkable printer, the LaserWriter IINT; and Macintosh II, to make light work of your heaviest printing demands.

To attach the LaserWriter IIsc to a single Macintosh, all you need is an Apple SCSI cable. To share a LaserWriter IINT or IINTX printer with up to 31



our expandable, high-performance printer, the LaserWriter IINTX.

When you choose one LaserWriter II printer, you choose all three. Because although each offers a different level of printing performance, they share the same modular design. This design consists of a print engine and one of three interchangeable controller boards. So you can upgrade the printer by replacing the controller board, while retaining your investment in the print engine.

The LaserWriter IIsc comes with four font families, and is built to be paired with any Macintosh computer.

The LaserWriter IINT and IINTX printers both have 11 commercial font families built in, for instant access to hundreds of professional type styles and sizes.

The LaserWriter IINTX is also expandable. You can add even more fonts via optional expansion cards, create a font library by attaching one or more hard-disk drives, and expand memory to enhance performance via font caching. And it's got the same high-speed processor as the

Our LaserWriter IINT and IINTX printers support PostScript* the industry-standard page description language for both printers and commercial typesetting systems.

Macintosh or MS-DOS computers on an AppleTalk* network, just plug in a LocalTalk[™]cable. (More on that in a minute.)

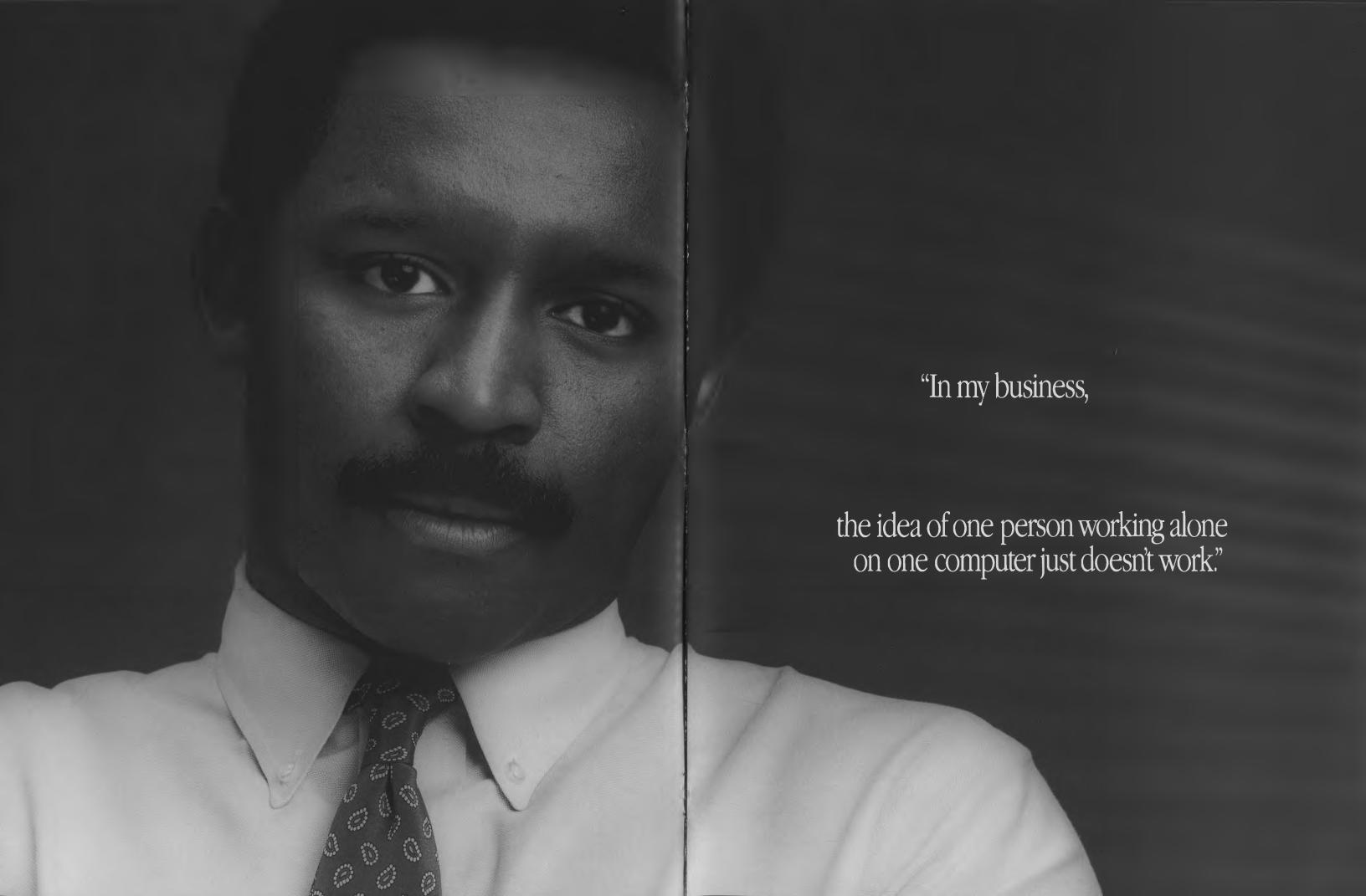
So with these components, plus your choice of software, you have the ability to publish high-quality work in your office. And what's even more important is that you have complete control over the timing, security, and cost of that work.

While we're on the subject of cost efficiency, it's reassuring to know that you can spread the cost of this high-quality printer among up to 31 people simply by plugging cables together.

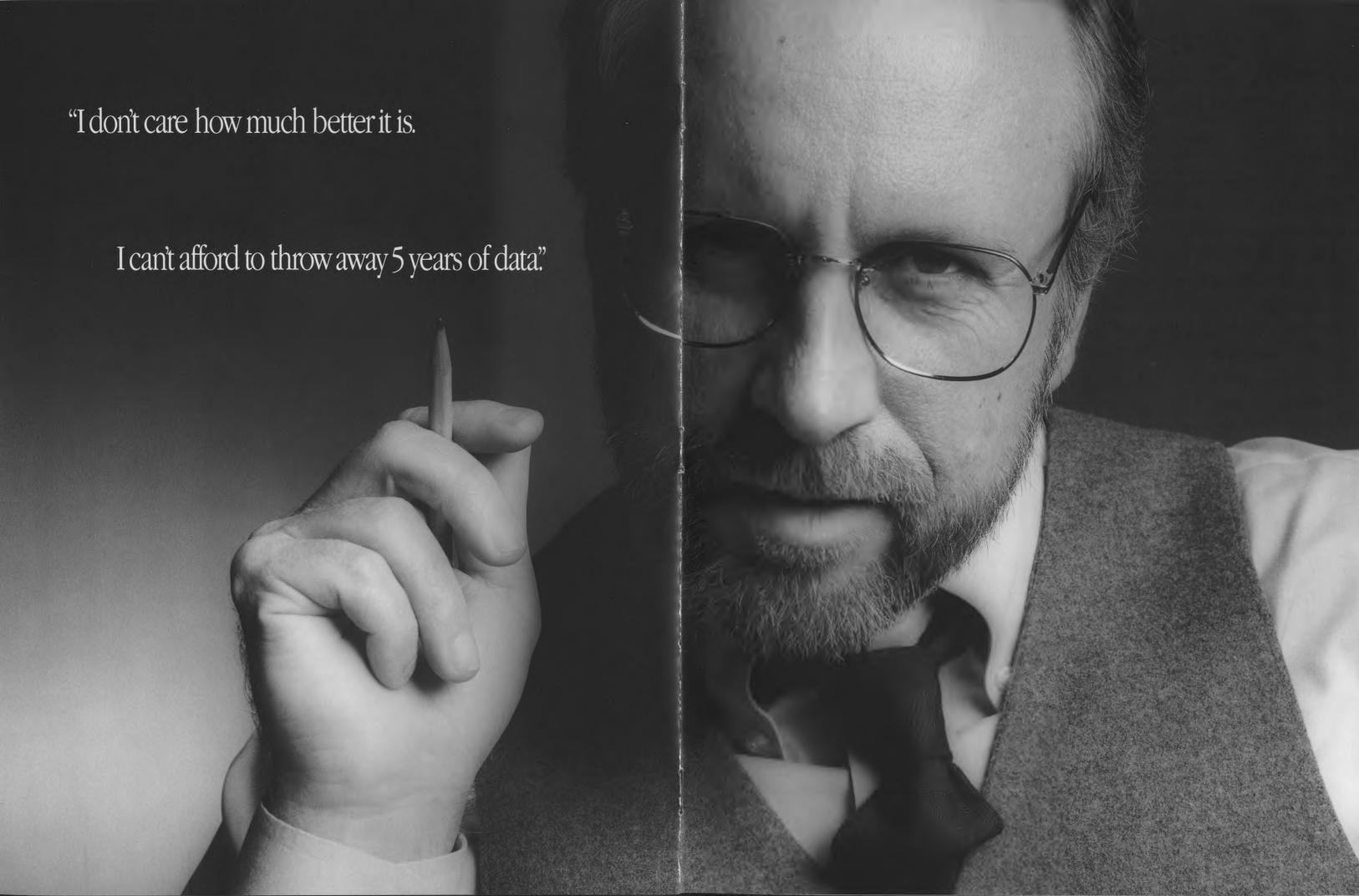
And, if you choose to add additional components such as scanners, file servers, and special monitors, you can very simply expand this desktop system into one that handles the most sophisticated combinations of type styles, artwork, and illustration. That's because it was designed from the beginning to be as flexible as it is expandable.

All in all, Macintosh is a lot more than just a tool for making pictures.

It's a very efficient tool for making other people see things your way.









Not many people get a chance to improve history.

But you can.

If the words and numbers that tell the story of your business—your business history—have been recorded on an MS-DOS-based computer, now you can use the graphics-, data-, and documentprocessing power of Macintosh to make them more dramatic, more informative. and more useful.

Here's one easy way to do it. Instead of inserting a disk full of data into your MS-DOS system, you can read the same data into your Macintosh using an Apple PC 5.25 Drive, our MS-DOS-compatible drive for 5.25-inch floppy disks.

Your history will look better than ever.

Because the leading Macintosh and MS-DOS applications can read and share one another's documents, you can use the unique features of Macintosh to change history in ways never before possible.

For example, Microsoft Word for Macintosh can read Microsoft Word PC

files directly, allowing you to incorporate graphics pictures, charts, drawings, scanned images—into your documents as easily as you can incorporate numbers and words.

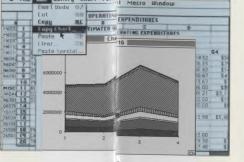
It also lets you move back and forth instantaneously between spreadsheets like Microsoft Excel. drawing programs like

MacDraw II, and other Macintosh programs as you create complex documents.

Meanwhile, Microsoft Excel will take your Lotus 1-2-3 data, analyze it, graph it, and display it on the screen with the spreadsheet.

But maybe you don't relish the

Start with the data of a Lotus 1-2-3 spreadsheet, generated from an MS-DOS personal computer.



Add the automatic chart-making

thought of racing around the office, carrying floppy disks from desk to desk.

Put your track shoes away.

You can also transfer MS-DOS files to a Macintosh electronically over an AppleTalk network.

Our LocalTalk PC Card transforms

Quarterly Recap

And put pages of information into the form

in which they'll do the most good.

an IBM PC or compatible into a functioning AppleTalk workstation.

With the aid of AppleShare PC software, PCs can not only share information with Macintosh computers and other PCs using the AppleShare file server, they can also share LaserWriter printers.

So while you're upgrading your electronic communications, you can upgrade your printed communications. By incorporating all those previously unavailable fonts, type styles, and graphics into PC documents.

Even before you install an AppleTalk network, you can always turn to products like MacLink Plus from

DataViz, to transfer data between a PC and a Macintosh over a standard RS-232 cable.

The ability to enhance MS-DOS data and documents on a Macintosh may strike you as a startling technological advance.

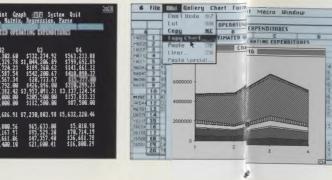
If so, you'd better dust off a few more superlatives.

Because some innovative engineering also enables you to run many of your MS-DOS applications on a Macintosh computer.

And while you won't have the familiar Macintosh pull-down menus in these programs, you will enjoy the convenience of running both families of leading business software on one desk, and on one computer.

Which means the Macintosh family isn't just enhancing history.

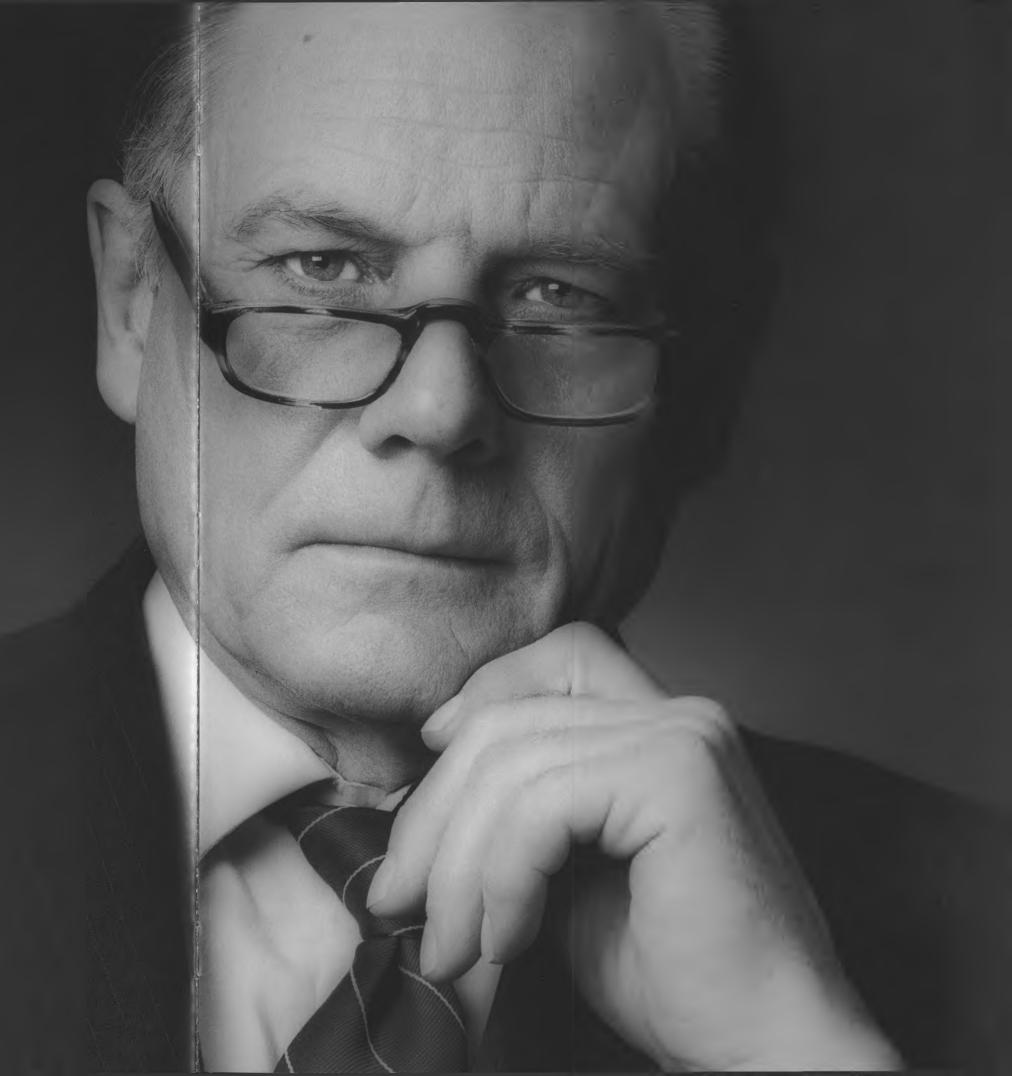
It's rewriting it, too.



capability of Excel, pluthe desktop publishing power of a Macintosh.

"I've been promised everything from more productivity to whiter teeth.

So excuse me if I'm not reaching formy checkbook."



Before you get behind Macintosh, get in front of one.

A personal computer is a serious investment.

So before you recommend a Macintosh computer to your company, evaluate one for yourself.

With a call to your authorized Apple representative, you can try the Apple products we're describing here.

Macintosh Plus

For a simple, low-cost way to join the Macintosh family, start with a Macintosh Plus.

Everything you need to begin running Macintosh software comes in one box: integrated high-resolution monitor, mouse, keyboard, 1 megabyte of RAM (expandable to 4 megabytes), internal 3.5-inch 800-kilobyte floppy-disk drive, and built-in AppléTalk network interface.

What's more, you can expand the system with such peripherals as external disk drives, modems, printers, or other devices, all of which plug easily into the back, without requiring interface cards.

Macintosh SE

If you'd prefer more flexibility and expandability for not much more money, try out the Macintosh SE.

It's compatible with existing
Macintosh software and is equipped with
two internal disk drives. Both can be
800-kilobyte floppy-disk drives. Or one
can be a 20-megabyte (or larger) hard
disk, giving you more storage inside the
Macintosh without taking up more space
outside it.

Like the Macintosh Plus, a Macintosh SE comes standard with a full megabyte of RAM, which can be expanded to up to 4 megabytes. You can also add disk drives, modems, printers, and other devices externally.

In addition to these features, the

Macintosh SE comes with an expansion slot that accepts special-purpose boards for communications and high-speed computing.

Furthermore, you get your choice of an Apple Keyboard with its integrated numeric keypad, or the Apple Extended Keyboard with both the keypad and 15 function keys.

Macintosh II

If you want to combine Macintosh technology with high performance, look into the Macintosh II.

Because it has a Motorola 68020 microprocessor, you'll see the results of your efforts up to four times faster.

The Macintosh II has twice the processing speed of a Macintosh Plus, as well as twice the data-handling capacity (a full 32 bits at a time).

You can also see those results in color.

With its optional 13-inch color monitor that offers near-photographic-quality images, the Macintosh II is likely to do for color computing what the original Macintosh did for black and white: set new standards for resolution, creativity, and ease of use.

When we suggested you look into the Macintosh II, we meant it.

Literally. Open one up.

It's the first Macintosh computer with a user-removable cover. Because it's the first Macintosh with a completely open architecture. Inside you'll find the processor board, as well as six expansion slots. These slots are connected via NuBus, **a high-performance electronic data highway.

The architecture of NuBus is readily available throughout the computer industry. So other innovative companies can join us in putting the latest technology to

work for you through special-purpose boards for communications, video processing, high-speed computing, and engineering design.

You can even turn your Macintosh II computer into a machine for running MS-DOS programs on demand.

A good bet.

Is a Macintosh computer right for you? Well, not every investment is right for every investor.

But with a family of computers, from the affordable Macintosh Plus to the high-performance Macintosh II, it's a good bet that Macintosh will give you the return you're looking for.

Try one. Or try all three.

Chances are, you won't come away wondering how much you need a Macintosh.

Just how much Macintosh you need.





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Just how much Macintosh you need.





Macintosh **Basic Business System**

This Macintosh system packs a lot of power and performance into very little space. It's ideal for individuals or for

small businesses that need a simple way to put Macintosh technology to work. The Macintosh Plus runs all the popular



the Macintosh Plus system will easily double as a low-cost network workstation as business needs grow, and can

function as a file server as well to enhance the lines of communication between users.

Computer: Macintosh Plus with built-in 800K floppy-disk drive

Monitor: Built in

Keyboard: Macintosh Plus Keyboard included Mouse: Macintosh Plus Mouse included

Disk Storage: External 800K floppydisk drive

Printer: ImageWriter II



Macintosh Desktop Publishing System

With only three hardware components and one of the many desktop publishing packages available, this versatile desktop publishing system can put

the flexibility of a design shop on the corner of your desk. The LaserWriter IINT and IINTX printers—with their 11 built-in, licensed typefaces—produce documents with 300-dot-per-inch text and graphics over the entire page: a clarity previously available only from dedicated typesetting systems. And because these

two printers can be networked over an AppleTalk network, up to 31 Macintosh

users can realize the power of published words and pictures.

Computer: Macintosh SE

Monitor: Built in

Keyboard: Apple Keyboard included Mouse: Apple Desktop Bus™ Mouse included Disk Storage: Internal 800K floppy-disk drive, internal 20-megabyte hard-disk drive Printer: LaserWriter IINT or IINTX

AppleTalk Requirement: LocalTalk cable



Macintosh Professional System

Perfect for general business needs, this professional system is ideally suited for basic word processing and spreadsheet analysis tasks, as well as for preparing presentations. Because the Macintosh SE is internally expandable, options that address your business needs—such as the ability to enhance the system's performance or work with MS-DOS data—can be readily incorporated.



Add an Apple Personal Modem, a telephone, and the appropriate software, for example, and you can access information services around the world, such as corporate mainframes and commercial databases. Once you have the information, the Macintosh SE lets you display, dissect, digest, and distribute it with true Macintosh simplicity. And with Multi-Finder, you can work with your computer the same way you always worked before you had a computer—switching from task to task as the need arises.

Computer: Macintosh SE Monitor: Built in

Keyboard: Apple Keyboard

Mouse: Apple Desktop Bus Mouse included Disk Storage: Internal 800K floppy-disk drive, internal 20-megabyte hard-disk drive Printer: ImageWriter LQ or LaserWriter IINT Modem: Apple Personal Modem Additional Peripheral: Apple PC 5.25 Drive

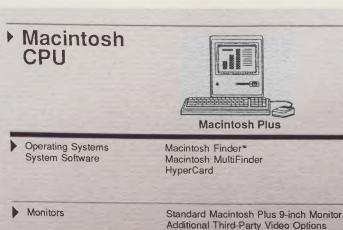
Then see how

Macinto

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HyperCa

Standard



Keyboards	Standard Macintosh Plus Keyboard	Apple K Apple E
Mouse	Standard Macintosh Plus Mouse	Apple D
Storage Devices	Apple 3.5 Drive Apple Hard Disk 20SC Apple Hard Disk 40SC Apple Hard Disk 80SC Apple Tape Backup 40SC AppleCD SC™Drive	Apple 3 Apple P Apple H Apple H Apple H Macinto Apple C Apple C

	LaserWriter IIsc LaserWriter IInt LaserWriter IIntx	LaserWrit LaserWrit
Memory Upgrades	Apple 2MB Memory Expansion Kit	Apple 2M
Cards/Upgrade Chips		Macintos
Communications	AppleTalk Network System Apple Personal Modem	AppleTak Apple Per

AppleShare Print Server AppleFax™ Moden

ImageWriter II

ImageWriter LQ

Printers

With the introduction of our Macintosh computer in 1984, people discovered that a computer could unleash their creativity. With the expansion of our Macintosh family in 1987, people discovered it all over again.

Now this creativity includes not only what they can do with a computer, but also what they can do to it.

That's because a Macintosh computer is more than easy to use. It's also extremely easy to

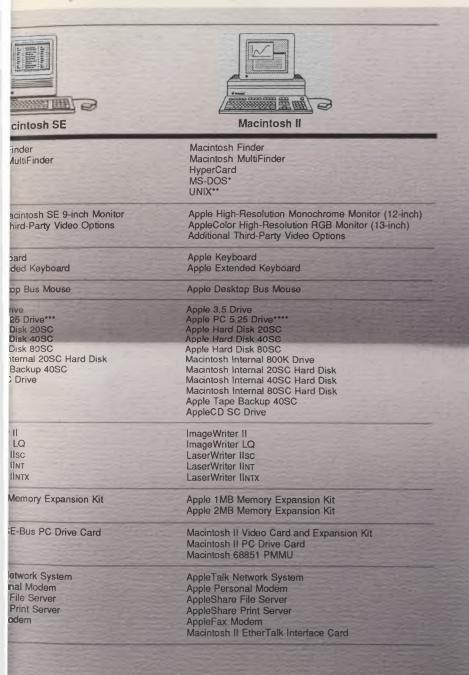
Thanks to a carefully thought-out design, you don't need a lot of adapters, cards, and engineering know-how to turn an ordinary Macintosh into an extraordinary desktop powerbouse.

^{*} Requires appropriate software or card

**A/UX, Apple's version of AT&T UNIX; requires PMMU chip

** Requires Macintosh SE-Bus PC Drive Card

far you can go.



But that doesn't mean it's hard to choose the right Macintosh system. The only thing that's hard to do is make a mistake. That's because a Macintosh system is so easy to configure, you can change it around as quickly as you change your mind.

And even major changes in your system won't cause major changes in your style of operation.

All your experience with the simplest Macintosh naturally extends to the most powerful.

Because all Macintosh computers and peripherals work the same way.

So your initial investment in a Macintosh will stay with you no matter bow far you go. Even if it's all the way to the top.

Macintosh Advanced Professional System

If your job calls for storing, sorting, analyzing, and otherwise manipulating large amounts of data, this system brings more power to bear on those tasks than any other Macintosh in history. It also offers the power and capability needed by



anyone doing financial analysis, writing, or design. The traditional high-resolution graphics, combined with the extra dimension of a palette of over 16 million colors, make even the finest points easy to see. If your application doesn't require color, Apple also offers a high-resolution, 12-inch monochrome monitor that can produce gray scales for on-screen halftone capabilities.

Computer: Macintosh II

Monitor: AppleColor™ High-Resolution
RGB Monitor (13-inch)

Keyboard: Apple Extended Keyboard

Mouse: Apple Desktop Bus Mouse included
Disk Storage: Internal 800K floppy-disk
drive, internal 80-megabyte hard-disk drive

Printer: LaserWriter IINT or IINTX

AppleShare Network File Server

Any Macintosh Plus, Macintosh SE, or Macintosh II can operate as a file server on an AppleTalk network. But for medium-size to large networks, the configuration shown here provides the maximum level of performance. The internal 80-megabyte hard-disk drive—which can be augmented by high-capacity external storage devices—expands file storage capabilities, while Apple's convenient cartridge tape drive is recommended for archiving important records.

For less demanding network applications, a Macintosh Plus or Macintosh SE can be used and, as your needs increase, a Macintosh II can easily be substituted, freeing up the original Macintosh for



other network service as a workstation. The file server can also support AppleShare Print Server software, which queues up documents for printing with a LaserWriter II.

Computer: Macintosh II

Monitor: Apple High-Resolution Monochrome Monitor (12-inch)

Mouse: Apple Desktop Bus Mouse included Disk Storage: Internal 800K floppy-disk drive, internal 80-megabyte hard-disk drive, Apple Tape Backup SC

Software: AppleShare File Server, AppleShare Print Server



Macintosh Professional Workstation

For big pages and big projects, a big screen is a necessity. For maximum performance, attach a large-screen monitor to your Macintosh II system. The large viewing area lets you examine in detail the

work you've created with desktop publishing and engineering applications. It also allows you to see more information on the

screen at one time while you're building large spreadsheets and databases.

And the Macintosh II computer's speed, combined with its on-line storage capacity, lets you keep your other work little more than a point and click away.

The Macintosh II also gives you a choice of operating systems. It supports

MultiFinder, MS-DOS, and, should your environment require it, UNIX. Apple offers our very own version of AT&T UNIX,* called A/UX,* which combines the Macintosh interface with this industrystandard multiuser operating system. It also lets you run many applications designed for the Macintosh operating system on the A/UX system, without changing them. Which instantly makes thousands of Macintosh applications available to people working in the UNIX environment.

Computer: Macintosh II

Monitor: Large-screen color monitor
(available from third-party developers)

Keyboard: Apple Extended Keyboard

Mouse: Apple Desktop Bus Mouse included

Disk Storage: Internal 800K floppy-disk
drive, internal 40-megabyte hard-disk drive

Printer: LaserWriter IINTX

Additional Peripheral: Apple PC 5.25 Drive





We've done this over a million times.



Not bad for a computer that, by its very design, defied conventional wisdom.

But not uncommon for a company that believes conventional wisdom is often a contradiction in terms.

There must be something to that philosophy.

You'll find Macintosh computers hard at work in over 85 countries worldwide. And Apple, its representatives, and

company.

But equally important, our unconventional thinking has become very mainstream very fast.

That's because a lot of people in business have found that Macintosh can help them get a lot more work done, a lot faster.

And industry professionals acknowledge that the most powerful and innois being developed for Macintosh.

With such advances as the Macintosh SE, the Macintosh II, the LaserWriter II, AppleTalk, AppleShare, and MultiFinder, the Macintosh family is establishing even more standards for conventional computer makers to follow.

But that's not new either.

In the past four years we've seen it happen a million times.

© 1988 Apple Computer, Inc. Apple, the Apple logo, AppleShare, AppleTalk, A/UX, ImageWriter, LaserWriter, and MultiFinder are trademarks of Apple Computer, Inc. AppleCD SC, AppleColor, Apple Deskrop Bus, AppleFax, EtherTalk, Finder, LocaTalk, and MultiFinder are trademarks of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corporation. Incornot is a registered trademark of Alleid Corporation Loss and 1.2 are registered trademarks of Loss Development Corporation. Moreon Corporation in Moreon Corporation Survival Apple Corporation Survival Provision. Moreon Cor Printed in the U.S.A. May 1988





Overview

The Macintosh® II personal computer is the high-performance, open-architecture member of the Macintosh family. It provides advanced color and graphics capabilities, with a palette of over 16 million colors.

The Macintosh II is designed for advanced applications in business, desktop publishing, science, and engineering. It comes standard with a full 32-bit 68020 microprocessor and a 68881 floating-point coprocessor.

For maximum flexibility, the Macintosh II makes room for more memory—up to 8 megabytes of on-board RAM—and includes six built-in ports and six expansion slots that let you create virtually any system

configuration you need. Using hardware and software options from Apple and third parties, the Macintosh II can support other operating environments, including MS-DOS and AT&T UNIX®.

To go with the Macintosh II, you have a choice of monitors—including the AppleColor High-Resolution RGB Monitor—as well as keyboards and internal or external disk drives.

The Macintosh II is compatible with existing Macintosh software, and comes standard with 1 megabyte of RAM and a built-in 800-kilobyte floppy disk drive. It is available in two configurations: with or without an internal 40-megabyte hard disk drive.

Adding to the power and versatility of the Macintosh II is Apple's first-generation multitasking operating system, MultiFinder. MultiFinder allows you to open multiple applications concurrently and perform background tasks—such as printing documents on laser printers—while you continue to work in an application.

In addition to the System software, the Macintosh II is packaged with Apple's exciting HyperCard® application. HyperCard is an information-management toolkit that lets you organize information on your computer the way you organize it in your mind by association, and with unlimited cross-references.

Benefits

1 000001 03	Beriejus		
► Full 32-bit, 68020 microprocessor operating at 15.7 megahertz	 Provides increased speed, power, and performance—up to four times greater than with Apple's previous 68000-based computers. Performs arithmetic calculations up to 200 times faster than previous systems. Lets you run the most powerful, sophisticated software available. Accommodates extremely large models, documents, and databases. Provides the flexibility to grow as you need additional memory. With MultiFinder, allows you to use multiple applications simultaneously. The Hierarchical File System organizes storage for documents and allows easy access to files. The SCSI interface supports high-performance peripherals. QuickDraw provides the consistent graphics interface throughout the Macintosh family. Color QuickDraw provides a consistent interface for both black-and-white and color applications. 		
► 68881 floating-point coprocessor			
▶ 1 megabyte of on-board RAM, expandable to 8 megabytes			
► 256K of ROM that includes: —Hierarchical File System —Drivers for Macintosh hard disk drives, NuBus™ expansion slots, Apple Desktop Bus™, 68881 floating-point coprocessor, SCSI, and AppleTalk® network —Color QuickDraw			
► Six NuBus expansion slots	 ▶ Makes it easy to add memory, communications, and coprocessor cards. (Cards are self-configuring—they require no DIP switches, and can be placed in any slot.) ▶ Lets you configure your system to meet your specific needs. ▶ Provides flexibility for expansion as requirements change and new technology becomes available. ▶ Lets you work within other operating environments. 		
► Advanced color graphics capabilities	Allows you to create and display vivid, true-to-life graphics using over 16 million colors.		

- ► Six built-in ports: two serial, two Apple Desktop Bus, one SCSI, one sound
- over 16 million

- ► Lets you expand your system with popular peripherals without using expansion slots.
- ▶ Provides access to LocalTalk[™] cabling based networks, which allows you to connect your Macintosh II to other computers and to LaserWriter® II printers through the AppleTalk Network System.
- ► Provides connection for Apple Desktop Bus devices such as keyboards and mice.
- ► Supports up to seven high-speed SCSI peripherals.

Features

Benefits

► Internal SCSI connector	Permits connection of internal hard disks.		
► SCSI transfer rate up to 1 megabyte per second	► Allows fast loading and saving of applications and documents.		
► Two standard configurations: —800K built-in disk drive —800K drive, plus internal 40-megabyte hard disk drive —A second internal 800K drive can be added to both configurations	 Gives you multiple storage options. Uses standard 800K 3.5-inch disks. Requires no desk space for disk drives. Lets you add storage capacity as your requirements expand. Makes applications easy to learn and intuitive. Provides a consistent interface across applications. Reduces training and support costs in a corporate environment. 		
► Macintosh user interface: mouse, icons, windows, and pull-down menus			
► MultiFinder multitasking operating system	 Enables you to use multiple applications simultaneously and easily transfer data among them by cutting and pasting. Allows you to continue working with applications while performing background tasks such as laser printing. 		
► Macintosh software compatibility	► Runs existing Macintosh software.		
► Apple stereo sound chip	 Provides high-quality digital sound. Is compatible with most applications that use Macintosh sound. 		
► Optional 68851 PMMU memory management upgrade	► Provides memory management necessary to run multitasking, multiuser operating systems such as A/UX®, Apple's implementation of AT&T UNIX®.		
 Choice of keyboards (sold separately): Apple Keyboard Apple Extended Keyboard 	 Apple Keyboard includes numeric keypad and cursor keys for efficient operations. Apple Extended Keyboard also includes 15 function keys, letting you work effectively with alternate operating systems, terminal emulation programs, and other data communications applications. 		
► Choice of monitors (sold separately): —Apple High-Resolution Monochrome Monitor —AppleColor High-Resolution RGB Monitor	Lets you choose the monitor that best fits your needs.		

Product Details

System configuration

- ► Two configurations are available: —The Macintosh II CPU, which includes the CPU, 68881 floating-point coprocessor, 1 megabyte of RAM, one 800K 3.5-inch floppy disk drive, and mouse.
- —The Macintosh II Hard Disk 40 CPU, which includes the Macintosh II CPU plus an internal 40-megabyte SCSI hard disk drive.
- ► Keyboard, monitors, and other peripheral devices are packaged and sold separately.

NuBus expansion slots

- ► NuBus provides a 32-bit single address bus and data bus on a 96-pin connector.
- ► NuBus is self-configuring. Cards can be plugged into any slot and the system will automatically identify and configure each card, without any DIP switches or jumper wires.

68020 processor

► The Macintosh II is equipped with the 32-bit 68020 processor running at 15.7 megahertz. Overall, the performance of the Macintosh II is at least four times faster than that of Apple's 68000-based systems.

► The 32-bit address bus provides a total addressable space of 4 gigabytes.

RAM

► RAM can be upgraded on the motherboard to 2 megabytes with the 1MB RAM Expansion Kit; it can be upgraded to 4, 5, or 8 megabytes with 2MB RAM Expansion Kits.

68881 floating-point math coprocessor

- ► Macintosh programs that utilize the Standard Apple Numerics Environment (SANE®) will have floating-point computations accelerated by 3 to 30 times.
- ▶ Programs that make direct use of the 68881 will have floating-point computations accelerated by up to 200 times.

Stereo sound

► The Apple Sound Chip supports stereo sound at a sampling rate of up to 44.1 kilohertz.

SCSI (Small Computer Systems Interface)

- ► SCSI is a high-performance interface for connecting the computer to hard disks and other mass-storage peripherals. Up to seven SCSI peripherals (including internal hard disk) can be connected to the Macintosh II.
- ► SCSI performance on the Macintosh II is rated at up to 1 megabyte per second (up to four times faster than on a Macintosh Plus).

Network support

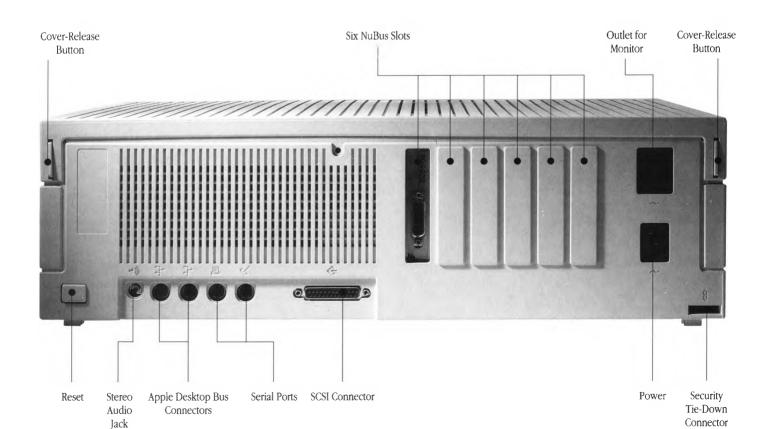
► The Macintosh II serial ports include full support for AppleTalk network connections.

Operating system software

- ► Macintosh System software includes:
- -MultiFinder
- —Utilities such as the Hard Disk Backup

HyperCard

► HyperCard software included.



Technical Specifications

Processor

MC68020, 32-bit internal architecture, 15.7-megahertz clock speed

Math coprocessor

► 68881 floating-point device (IEEE standard)

Memory

- ► 1 megabyte of RAM, expandable to 8 megabytes on board
- ► 256K of ROM standard

Memory management

► Optional 68851 PMMU

Disk storage

- ▶ Two standard configurations
- —One built-in 800K disk drive —One built-in 800K disk drive and an internal 40-megabyte SCSI hard disk drive
- ► Options include 20-, 40-, and 80-megabyte internal SCSI hard disk drives

Monitor options (sold separately)

- ► Apple High-Resolution Monochrome Monitor: an analog monitor with a 12-inch diagonal screen, 640 by 480 pixels
- ► AppleColor High-Resolution RGB Monitor: an analog RGB monitor with 13-inch diagonal screen, 640 by 480 pixels

Color capabilities

- ► Palette of over 16 million colors
- ► Color QuickDraw built into ROM

Keyboard options (sold separately)

Detachable keyboard options:

- ► Apple Keyboard: 81 keys, including numeric keypad and cursor keys
- ► Apple Extended Keyboard: 105 keys, including 15 function keys, separate cursor pad, 10key numeric keypad, and Apple Desktop Bus connectors

Mouse (included)

► Mechanical tracking: optical shaft encoding at 3.54 pulses per mm (90 pulses per inch) of travel

Interfaces

- ► Two mini-8 serial (RS-232/RS-422) ports
- ► SCSI interface; uses a 50-pin connector (internal) and a DB-25 connector (external)
- ► Two Apple Desktop Bus (ADB) ports
- ► Six NuBus internal slots supporting full 32-bit address and data buses

Sound generator

► Apple custom digital sound chip (ASC), including four-voice wave-table synthesis, stereo sampling generator. Capable of driving stereo headphones or other stereo equipment.

Electrical requirements

- ► Line voltage: 90 to 140 volts AC; 170 to 270 volts AC, automatically configured
- ► Frequency: 48 to 62 Hz
- ► Maximum power: 230 watts, not including monitor power

Size and weight

Main unit

- ► Height: 5.51 in. (14.0 cm)
- ► Width: 18.66 in. (47.4 cm)
- ► Depth: 14.37 in. (36.5 cm)
- ► Weight: 24 lbs. to 26 lbs. (10.9 kg to 11.8 kg)*

Mouse

- ► Height: 1.11 in. (2.8 cm)
- ➤ Width: 2.1 in. (5.3 cm)
- ► Depth: 3.8 in. (9.7 cm)
- ➤ Weight: 6 oz. (.17 kg)

Weight varies depending on whether optional hard disk or second floppy disk has been installed.



Macintosh II

Ordering Information	Macintosh II CPU	Order No. M5333	With your order, you'll receive: ► Macintosh II personal com-
			puter with a built-in 800K disk drive Mouse Owner's guide System software Training disks (2)
	Macintosh II	Owlor No M5/20	Limited warranty statement
	MacMosh H Hard Disk 40 CPU	Order No. M5430	With your order, you'll receive: Macintosh II personal computer with a built-in 800K disk drive and an internal 40-megabyte SCSI hard disk drive Mouse Owner's guide System software Training disks (2) Limited warranty statement



Macintosh II Product Guide

Macintosh II Product Guide

This guide describes third-party software and hardware products that specifically take advantage of the new features of the Apple® Macintosh® II computer. These features include its open architecture, the 68881 math coprocessor, color capability, and support for large-screen monitors.

Apple's Developer Programs group has compiled this guide to provide you with the most current information available on new products for the Macintosh II. The guide is not meant to endorse the products described, nor is it intended as a complete listing of products that work with the Macintosh II.

The guide is organized in two sections—Software and Hardware. Products within the Hardware section are listed alphabetically, and products within the Software section are listed alphabetically under the following categories:

- · Connectivity
- · Engineering
- Education
- · Graphics and Desktop Publishing
- Office Solutions
- Languages

Each entry includes the product name and version number, its manufacturer or distributor, a phone number you can call for more information, and a brief description of the product.

The Developer Programs group welcomes any comments and/or suggestions regarding this guide, as well as your recommendations for other new or revised products to be included. Please address any questions or concerns to me at (408) 973-5699 or via AppleLink® at TENNESSEN1.

Sincerely,

James B. Tennessen Developer Programs

SoftwareConnectivity

iTalk 3.0 Palantir (713) 955-8880

MacMover 3.0 Tri-Data Systems (415) 969-3700

Mac240 2 White Pine Software (603) 886-9050

Mac241 White Pine Software (603) 886-9050

Netway 1000A 4.0 Tri-Data Systems (415) 969-3700

> BEAM MAC 1.0 Compuneering (416) 738-4601

COGO MAC Compuneering (416) 738-4601

Design Dimensions II 1.18 Visual Information (818) 918-8834 New telecommunications software. Features include support for the Macintosh II and Macintosh SE keyboards; international character sets; and multiple resizable, movable windows.

File-transfer mechanism for the Netway 1000A that includes a second style of binary transfer. MacMover allows WKS files, DCA text files, and IGES graphics files to be sent and received by the Macintosh. With an MS-DOS card installed, the Macintosh II is simultaneously a Macintosh computer, an MS-DOS machine, and, when connected to a mainframe, a 3270 workstation.

This VT240 terminal emulator for the Macintosh has several new features, including installable network drivers for network connectivity, support for large-screen monitors on the Macintosh II, and full support for the Apple Extended Keyboard.

A VT241 terminal emulator for the Macintosh II. The VT241 is the text, graphics, and color terminal used in DEC[™] applications. Users of the Macintosh II can have all the color and graphics features of the VT241 at their terminals, as well as access to VAX[™] applications.

A 3274 gateway for the AppleTalk® network system. This new 3278 emulator now makes full use of the Apple Extended Keyboard and fully supports European character sets. A Macintosh mainframe solution.

Engineering

Analyzes and assists in the design of simple beams. Uses color to differentiate between the originally drawn structure and the modified structure.

Applies the ease of use of the Macintosh to the tedious tasks of road layout and land surveying. COGO MAC allows the Macintosh II user to select colors, and the program also takes advantage of the computer's full-screen capability.

This 3-D computer-aided design (CAD) and free-form surface modeling system enables engineers, architects, and graphic designers to perform three-dimensional conceptual design. Up to 16 windows can be selected, each with 18 possible viewing orientations in a flat, angled, or perspective mode. Users have access to Macintosh 2-D drafting systems through the Clipboard and the PICT file format, and to IBM PC CAD packages through the DFX transfer utility. Design Dimensions II allows users to design in color, selecting from a 16.7-million-color palette.

dScience

Spectra Blue, Inc. (602) 882-4878

dScience is a data-reduction and -analysis program featuring surface, contour, and two-dimensional plotting, with over 200 numerical analysis routines and presentation capabilities. Supports color QuickDraw and is fully 68020/68881-compatible.

Eureka

Borland International (408) 438-8696

With Eureka, Macintosh users can solve problems in business, economics, statistics, engineering, mathematics, physics, chemistry, and other disciplines requiring mathematical analysis. Eureka takes advantage of the color capabilities of the Macintosh II, and makes full use of the 68881 math coprocessor.

FRAME MAC 1.0 Compuneering (416) 738-4601 Analyzes and assists in the design of two-dimensional frames, trusses, and beams. Uses color to differentiate between the originally drawn structure and the modified structure.

MacCOGO 1.0 Compuneering (416) 738-4601 With MacCOGO, the user draws and changes combinations of colored or shaded shapes in a MacDraw-style window. Another window lists geometric information about each of the shapes, while a third window displays information about the entire group of shapes. MacCOGO supports color on the Macintosh II. The Color Picker (a color menu) allows users to change the color of each of the drawn shapes, singly or in groups. The Color Picker is also available to allow users to create their own colors.

MathView Professional 1.0 BrainPower (818) 884-6911 MathView Professional is a powerful stand-alone package that performs mathematical computations. MathView Professional takes advantage of the Macintosh II computer's 68881 floating-point coprocessor to perform faster arithmetic calculations.

MGMStation CAD 2.09 Micro CAD/CAM (213) 838-7851 MGMStation is a full-featured, high-precision CAD system. It offers unlimited zooming, fast panning, auto-dimensioning, multiple layering, automatic fillets, tangents, offsets, trimming, chamfering, and splines. A complete template/library capability is included. The Macintosh II version supports full color, and accesses the 68881 coprocessor for increased speed in drawing.

MGMStation Color CAD 2.5 Micro CAD/CAM (213) 838-7851

Customized color environment for CAD and CAM on the Macintosh II.

SpaceEdit 2.0 Abvent (213) 659-5157 SpaceEdit is a fully integrated 2-D and 3-D CAD software package. The program allows engineers and architects to design any object and then visualize it in perspective from any angle. SpaceEdit offers shading abilities and color options for the Macintosh II, and takes advantage of the new processors. It also supports large-screen monitors.

Graphitti 1.1 Badger Software (714) 621-2861

AffiniFile 1.2 Affinity Microsystems (303) 442-4840

Colorizer 1.1 Palomar Software (619) 727-3922

ColorLab Language Systems (703) 478-0181

Cricket Draw 1.01 Cricket Software (215) 252-9890

Cricket Graph 1.1 Cricket Software (215) 252-9890

Draw It Again Sam Aba Software 800-234-0230

GraphicWorks 1.1 Mindscape, Inc. (312) 480-7667

Education

Graphitti is a tool for high school and college students who are having difficulty in visualizing calculus. The program will plot virtually any function possible, and will symbolically find its derivative or anti-derivative and graph the new function. Graphitti works in color on a Macintosh II and accesses the power of the 68881 coprocessor.

Graphics and Desktop Publishing

A desk accessory for the Macintosh II that stores graphics and notes. Graphics can be stored and displayed in color.

Colorizer is a set of four separate color utilities for the Macintosh II. It allows color screen dumps to a printer or disk, includes a Color Paint Cutter to edit dumps, and provides color windows and menus.

ColorLab gives you all the tools to design professional-quality, full-color presentations. The user can prepare a presentation in a variety of formats: on-screen and via slides, overheads, documents, or handouts. ColorLab utilizes the 256 screen colors of the Macintosh II.

An object-oriented drawing program that has been designed to take advantage of the graphics capabilities of PostScript® printers. Cricket Draw gives the user command over advanced features through the easy-to-use, familiar Macintosh interface. Cricket Draw runs in color on the Macintosh II.

A high-performance graphing program intended for use in business, science, and engineering. Cricket Graph offers a wide variety of sophisticated charting tools, and it supports color on the Macintosh II.

With Draw It Again Sam, you can store up to 250 images—drawings, paintings, or text—in a library. You can access images instantly by clicking on an icon or selecting from the menu. You can create drawings, then have a free hand in editing arcs. Other features include grids, mouse coordinates, 11 zoom levels, and layers that can be printed separately. Draw It Again Sam takes advantage of the color capability of the Macintosh II.

A graphic design tool that incorporates an unlimited number of Paint, Draw, and Write (text) layers. GraphicWorks also includes advanced features such as airbrush, ThinBits, panels, easels, and more. GraphicWorks supports color on the Macintosh II.

ImageMaker MacDriver 1.0 Presentation Technologies (408) 749-1959 Provides high-quality (8,000-line resolution) desktop slide-making capability. Desktop presentations can now include brilliant color slides created in popular Macintosh applications. With a Macintosh II computer and a color monitor, you can preview slides in color and in WYSIWYG format.

Interleaf Publisher Interleaf (617) 577-9800 Interleaf Publisher turns the Macintosh II into a publishing power-house by allowing it to share documents with other workstations—such as those by Digital Equipment, Sun Microsystems, and Apollo—in a distributed publishing environment.

LaserPaint 1.1 LaserWare, Inc. (415) 453-9500

An integrated graphics application that combines PostScript drawing, bit-map editing, and painting. LaserPaint also has full text processing and page layout capabilities, and supports color on the Macintosh II.

MacPublisher III

MacPublisher III is a professional publishing software package for the Macintosh. Users can rotate text and graphics to any degree and print text in nine gray shades. Supports color on the Macintosh II.

Boston Publishing Systems (617) 267-4747

A two- and three-dimensional graphics package featuring a MacDrawstyle interface that allows the easy creation of complex models for use in technical applications and presentations. Mac3D supports tool libraries, auto-dimensioning, and PostScript gray and color shading. It can support 256 colors at a time, and takes advantage of the fullscreen capability of the Macintosh II.

Mac3D 2.1 Challenger Software (312) 957-3475

A color painting program for the Macintosh II that offers all the tools and features found in MacPaint. Modern Artist includes special three-dimensional and rainbow shading tools and functions.

Modern Artist

One of the most popular desktop publishing programs for the Macintosh. PageMaker 3.0 takes advantage of the full-screen capabilities of the Macintosh II.

Computer Friends (503) 626-2291

An easy-to-use graphics management system that allows the user to build a library of graphics. PictureBase can handle bit-mapped and object images in color or in black and white.

PageMaker 3.0 Aldus Corporation (206) 622-5500

PixelPaint unlocks the power of color in the Macintosh II. The program uses familiar Macintosh operations and standard painting icons, so you can get started right away in building powerful color images. PixelPaint provides a wide variety of standard palettes, such as pastel hues for a landscape or bright primary colors for a chart. Or you can define your own palettes of up to 256 colors from a choice of 16.7 million colors.

PictureBase

Symmetry Corp. (602) 844-2199

PixelPaint

SuperMac Software (415) 964-8884

QuarkXPress 1.04 Quark, Inc. (303) 934-2211

An integrated electronic-publishing system that offers full-featured word processing and advanced typographic capabilities. Includes an 80,000-word dictionary, and provides tracking to 0.05 of an em space and leading to 0.001 of a point. Other features include spot color separation and the ability to import pictures and text from other popular programs.

Ragtime 2 Orange Micro (714) 779-2772 Ragtime 2 allows you to integrate word processing, spreadsheet analysis, graphics management, desktop publishing, and forms generation within a single document. New capabilities for the Macintosh II include color and gray-scale support, as well as automatic use of the 68881 coprocessor for all spreadsheet calculations.

Reggie 1.0 White Pine Software (603) 886-9050 Reggie includes both desktop communications and desktop publishing capabilities. Converts Macintosh graphics into DEC-compatible ReGIS or SIXEL (the graphics formats used by DEC terminals and laser printers). Reggie takes full advantage of color on the Macintosh II and works with MacPaint, MacDraw, and PICT images.

Solid Dimensions II 2.0 Visual Information (818) 918-8834 Three-dimensional, solid-surface modeling system with extensions that allow you to create high-quality slides, overhead transparencies, and animated screen images. Solid Dimensions II supports color on the Macintosh II.

VideoWorks II

Now you can produce full-color presentations that move. Video-Works II makes it easier than ever before to animate your presentations. Presentations can include wipes, fades, and dissolves. Supports color on the Macintosh II.

Broderbund Software (415) 871-0987

Office Solutions

colors in your charts and documents.

DeClass 2.2 OITC (305) 984-3714

DeClass is a product for the U.S. government's DOD, DOE, NSA, and other security-aware agencies and contractors. DeClass has been updated to declassify the Macintosh II and peripherals that may have been used to process National Security Classified information.

Executive Advisor

Executive Advisor is a powerful management tool that makes it easy to extract, interpret, and communicate information contained in Great Plains Accounting Series modules. It generates more than 75 informative business ratios and analysis reports in attractive graph and table formats, and allows you to include a variety of patterns, fonts, and

Great Plains Software (701) 281-0550

FlowMaster Select Micro Systems

(914) 245-4670

Professional flowcharting system that allows advertising, marketing, public relations, and other business professionals to develop, print, and store flowcharts. FlowMaster displays full color on the Macintosh II and takes advantage of its full-screen capability.

Great Plains Accounting Series 4.2

Great Plains Software (701) 281-0550 The Great Plains Accounting Series includes General Ledger, Accounts Receivable, Accounts Payable, Payroll, Inventory, Order Entry, and Purchase Order modules. A Network Manager module is available for multiuser versions. The version 4.2 update includes color support for the Macintosh II.

MACOMO 1.3 OITC (305) 984-3714 MACOMO implements the industry-standard parametric pricing model, COCOMO, for software development estimation. MACOMO extends the COCOMO model to allow each organization to tailor the standard model to its own operations. MACOMO accesses the Macintosh II 68881 coprocessor to perform faster arithmetic calculations.

MapMaker

Select Micro Systems (914) 245-4670 This complete business map-making system combines powerful decision analysis with fast, colorful, easy-to-use mapping. MapMaker displays color on the Macintosh II and takes advantage of its full-screen capability.

ModaCAD

Compuarch (213) 271-1977

A Macintosh-based CAD environment for fashion designers and manufacturers, ModaCAD allows sketching, pattern generation, grading, and marking, as well as extensive project management. ModaCAD operates in full color on the Macintosh II, and can also interface to CCD cameras, digitizers, scanners, and graphics tablets.

MORE 1.1C Symantec Corporation (415) 964-6300

An integrated idea processor/presenter. You can outline plans, action items, or any kind of list, and immediately transform it into a variety of formats, including block diagrams, tree charts, and presentation-quality bullet charts. Includes color support for the Macintosh II.

OPEC Pricing Simulation

David Sternlight, Inc. (818) 441-4500

This software package for the Macintosh II simulates the decision-making behaviors of OPEC and other countries. Forecasts world oil prices and predicts supply and demand annually over a 20-year period.

StatView II

Abacus Concepts (415) 540-1949 StatView II is a statistical software package designed for the Macintosh II. The program analyzes data and creates publication-quality output. With StatView II, users can quickly and easily explore alternative statistical and graphic approaches to their data. Because it directly accesses the Macintosh II 68881 coprocessor, StatView II runs 30 to 50 times faster than StatView 512+. Utilizes the color capability of the Macintosh II.

TMON 2.8 ICOM Simulations (312) 520-4440

An interactive, multiwindow monitor debugger for the Macintosh. Compatible with large screens and the 68020 processor. Comes complete with a user's guide and technical reference manual.

Trapeze 2.0 Data Tailor Inc. (817) 332-8944

This integrated presentation worksheet allows you to integrate text, charts, graphics, and calculations—all on the same worksheet. All elements remain "live," allowing last-minute additions or changes to be made. Trapeze takes advantage of the color capability of the Macintosh II. Directly addresses the 68881 coprocessor, bypassing SANE® (Standard Apple Numerics Environment).

FORTRAN in MPW

Language Systems (703) 478-0181

(817) 870-2202

True BASIC 2.0 True BASIC, Inc. (603) 643-3882

Turbo Pascal 1.1 **Borland International** (408) 438-8696

MACTRAN PLUS 3.0 DCM Ltd.

Languages

FORTRAN in MPW[™] (Macintosh Programmer's Workshop) is a full implementation of ANSI-standard FORTRAN 77 with extensions. It supports SANE and all SANE data types. FORTRAN in MPW generates native 68000 object code, and utilizes the power of the Macintosh II by compiling to 68020 and in-line 68881 code.

MACTRAN PLUS caters to a wide spectrum of users. For beginners, its integrated development environment and intelligent symbolic debugger reduce turnaround time and increase productivity. For the professional user, it has the language extensions and robustness to handle large code and data sizes. MACTRAN PLUS has full support for the Macintosh II, including support for MultiFinder[™], in-line code generation for the 68020/68881, and color.

Highlights include full color support on the Macintosh II, an overall increase in speed, and direct access to the 68881 numeric coprocessor. Two new graphics toolkits allow the user to produce professionalquality graphs from within a True BASIC program. Includes the ability to manipulate colors and customize legends.

Macintosh software programmers can now fully utilize the Macintosh II when writing programs in Turbo Pascal. Turbo Pascal provides full support of the Macintosh II, including the libraries needed to call the ROM Toolbox and new systems facilities. Users can write programs that use the Macintosh II Color Manager and Sound Manager. An IBM PC compatibility unit and the ability to build code resources have also been added.

Hardware

ACM2-12 Strawberry Tree (408) 736-3083

Chromatron Monitor Adex (408) 866-2077

The analog connection ACM2-12 is a high-performance data-acquisition board for the Macintosh II. Ideal for use in the laboratory, it is designed for measurement and control of DC voltages, thermocouplers, RTDs, strain gauges, pressure sensors, and many other analog signals, from 2 microvolts to 10 volts.

The Chromatron Monitor is a 19-inch display featuring multiple scan rates from 31 to 67 KHz, and resolution up to 1,280 by 1,024 addressable pixels. When used with the Adex controller card on the Macintosh II, the monitor will select the screen rate presented by the MacColor graphics controller (see description later in this section), with no adjustment of the picture necessary.

ColorBoard 1/104

RasterOps (408) 446-4090

A 24-bit, true-color video card for the Macintosh II. Extensions to QuickDraw provide a 24-bit color environment that allows existing applications to use 24-bit color.

Color Printer

Computer Friends (503) 626-2291

The Shinko color printer produces high-quality, 200 dot-per-inch color printing on paper or overhead transparencies. The color printer driver is a Chooser-selectable resource.

80MB Internal SCSI Hard Drive

CMS Enhancements (714) 259-9555 A 26ms-average-access internal SCSI hard disk subsystem, shipped complete with power cable and drive cable. Heads auto-park at power down. Compatible with the AppleShare® File Server.

FirePower

Golden Triangle (619) 279-2100

FirePower frees the Macintosh II CPU of high-overhead or real-time applications, enabling it to support other operations such as the user interface. Unlike accelerators, FirePower is a full NuBus™ master/ slave with a 68020 processor, an optional 68881 floating-point unit, up to 4 megabytes of DRAM, two AppleTalk-compatible serial ports, and a high-performance SCSI interface. Its real-time operating system, GT/X, provides real-time processing and support for A/UX®, Apple's implementation of AT&T UNIX®. GT/X simplifies development of A/UX applications. Unlinked modules can be developed under A/UX, then dynamically loaded to GT/X for test and debug. A/UX processes can communicate transparently with GT/X applications using TCP/IP, via NuBus or Ethernet.

ForeRunner

Data Translation (617) 481-3700

ForeRunner is an analog and digital I/O board and software package for data acquisition on the Macintosh II. A combination of features—including 12-bit resolution for 16 single-ended or 8 differential channels—makes ForeRunner useful in a variety of laboratory, industrial, and control applications.

40MB Internal SCSI Hard Drive

CMS Enhancements (714) 259-9555 A 29ms-average-access internal SCSI hard disk subsystem, shipped complete with "Y" power cable, triple connector drive cable, and disk activity LED. Replaces the left-hand floppy disk drive in the Macintosh, allowing a 50MB hard disk to be installed in normal position. Heads auto-park at power down.

41MB Internal SCSI Hard Drive

CMS Enhancements (714) 259-9555 A 40ms-average-access internal SCSI hard disk subsystem, shipped complete with power cable. Heads auto-park at power down.

Grappler C/Mac/GS

Orange Micro (714) 779-2772 A parallel printer interface with built-in intelligence, Grappler enables non-Apple printers to emulate the ImageWriter® II. You don't need to install drivers or reselect menus. Popular printers like the Epson and Okidata can now run flawlessly.

MacColor

Adex (408) 866-2077 MacColor is a high-resolution frame buffer card for the Macintosh II; it can work in 2, 4, 16, or 256 mode. MacColor is equipped with 768 kilobytes of high-speed video RAM, and provides display capability of up to 1,024- by 768-pixel resolution at 8 bits per pixel. MacColor permits use of 256 colors or shades of gray simultaneously.

MacMainFrame II

Avatar Technologies (617) 435-6872

MacMainFrame consists of an internal card and software for the Macintosh II. This package enables users to access IBM 3270 mainframes via coaxial cable. MacMainFrame II provides IBM 3278/79 terminal emulation, full color support, and file-transfer capabilities.

MacProto

Adex (408) 866-2077

The MacProto project kit is a low-cost, high-performance solution that allows you to interface your custom designs to the Macintosh II. This rapid prototyping environment allows you to take full advantage of NuBus architecture without becoming a "bus" expert.

Mac286 1.0 AST Research (714) 553-0340

This add-on board brings IBM PC AT technology to the Macintosh II, allowing users to run most MS-DOS applications and easily transfer data files from 5.25-inch MS-DOS format to the Macintosh II desktop and back. Software included.

Magic 20

MacProducts 800-622-3475 External 20MB hard disk drive for the Macintosh II; includes such features as 65ms access time, 1:1 interleave factor, and automatic head park at power down. The drive has four power switches on the front with corresponding plugs in back, and includes built-in surge suppression.

Magic 20 Fast

MacProducts 800-622-3475 External 20MB hard disk drive for the Macintosh II; includes such features as 35ms access time, 1:1 interleave factor, and automatic head park at power down. The drive has four power switches on the front with corresponding plugs in back, and includes built-in surge suppression.

Magic 30

MacProducts 800-622-3475 External 30MB hard disk drive for the Macintosh II; includes such features as 40ms access time, 1:1 interleave factor, and automatic head park at power down. The drive has four power switches on the front with corresponding plugs in back, and includes built-in surge suppression. Also available in 46MB format.

Magic 40

MacProducts 800-622-3475 External 40MB hard disk drive for the Macintosh II; includes such features as 40ms access time, 1:1 interleave factor, and automatic head park at power down. The drive has four power switches on the front with corresponding plugs in back, and includes built-in surge suppression. Also available in 60MB and 80MB formats.

Magic 91 MacProducts

800-622-3475

External 91MB hard disk drive for the Macintosh II. Includes such features as 16.5ms access time; 1:1 interleave factor; and automatic head park and lock, with dynamic braking, at power down. The drive has four power switches on the front with corresponding plugs in back, and includes built-in surge suppression. Also available in 150MB and 300MB formats.

Magic 911 MacProducts 800-622-3475

Internal 91MB hard disk drive for the Macintosh II. Includes such features as 18ms access time; 1:1 interleave factor; and automatic head park and lock, with dynamic braking, at power down. The Magic 91I is shock-mounted.

Magic Tower 600 MacProducts 800-622-3475

External 600MB hard disk drive for the Macintosh II. Includes such features as 16.5ms access time; 1:1 interleave factor; and automatic head park and lock, with dynamic braking, at power down. The drive can be expanded to include more storage and/or tape backup drives, and has built-in surge suppression. Also available in 900MB, 1,200MB, or 1,500MB formats.

MegaBrot 1.0 MegaGraphics (818) 407-0058 With MegaBrot, esoteric mathematics display of the Mandelbrot fractal set is faster on the Macintosh II than on many mainframe computers. Generates 64-color display sets, with a user-definable palette and full display of coordinate specifications. Demonstrates the enormous power of the Macintosh II computer. Software included.

MegaScreen 2001 1.0 MegaGraphics (818) 407-0058

MegaScreen comes to the Macintosh II NuBus. The interface card is available as an upgrade kit, and includes software and cables; it also comes bundled with a 19.5-inch monitor. Full dual-screen capability in a two-page display, with full-featured software and user-definable video signals.

MegaScreen 2001 Video Upgrade

MegaGraphics (818) 407-0571

NuBus technology comes to the MegaScreen, providing flexible video output for the Macintosh II. Two clock oscillators are included; two oscillator sockets are upgradable. The package includes interface card, cable, MegaScreen software, MegaScreen user's guide, and installation instructions.

MegaScreen 2001 Video System MegaGraphics (818) 407-0571

Includes MegaScreen II Video Upgrade Kit and MegaScreen 19.5-inch horizontal monitor.

Moniterm Viking I Moniterm (612) 935-4151

If you do a lot of desktop publishing, you'll find that this monitor offers superior high resolution on the Macintosh II. It displays two full pages on the 19-inch screen with crisp, clear, solid type as small as 6 points.

NB Series Boards

National Instruments (512) 250-9119

The NB Series Boards provide data-acquisition and -control capability. The functions of these boards include analog-to-digital and digital-to-analog conversion, digital I/O, event timing, and IEEE-488 interface. These boards feature full software support under the LabVIEW software construction system, as well as support for conventional languages such as C, BASIC, FORTRAN, Pascal, and Assembly.

NS8/16 NuBus Memory Board

National Semiconductor 800-538-8510 A 4- to 16-megabyte NuBus memory board for the Macintosh II. For use with the Macintosh operating system, a RAM disk (shipped with the board) is installed by the user via the Control Panel. Under the A/UX operating system, the NS8/16 is used as main memory. The software necessary to install and run it with A/UX is included.

NTSC Converter

Julian Systems (415) 686-4400

With the NTSC Converter, anything displayed on your Macintosh II screen can be recorded to videotape. You can then use video editing tools and devices to create entire commercials, shorts, and presentations—all from your Macintosh II.

Orion II

Peak Systems (512) 327-3211

The Orion II is an MC68030-based accelerator board for the Macintosh II. Full support for up to 256K of static RAM and 8 standard SIMMs is provided on the card. The Orion II will also support NuBus block-mode transfers and DMA. Increases Macintosh II performance three to four times.

Pegasus

Data Translations (617) 481-3700 Data-acquisition board and software for high-speed analog and digital I/O on the Macintosh II. Optional Pegasus Interface Expansion Kit is available for programmers.

PRO150-II/i and PRO300-II/i

CMS Enhancements (714) 259-9555 The CMS PRO150 and PRO300 have average seek times of 16.5ms and transfer rates of 12 megabits per second, making them some of the fastest drives available for the Macintosh II. Because each subsystem is shipped pretested and formatted with a custom mounting bracket, installation takes only a few minutes.

ProViz Digitizer

Pixelogic (617) 938-7711

The ProViz is the first real-time video digitizer for the Macintosh. ProViz allows the user to bring images from any video source into the Macintosh, where they can be stored, transmitted via modem, or used in page layout. ProViz takes full advantage of the gray-scale display of the Macintosh II.

QuickCapture

Data Translation (617) 481-3700

This Macintosh II accessory consists of a plug-in frame grabber board and software package for capturing, manipulating, and displaying video images.

Rack II

Julian Systems (415) 686-4400 Rack II provides rugged housing for the Macintosh II computer, for use in audio and video studios, laboratories, moving vehicles, and other environments where the Apple packaging is inadequate to house the Macintosh II. Special features include 40G shock mounting, dual internal hard disk drives, enhanced RFI/EMI shielding, and Apple Desktop Bus™ and remote video connection.

Silver Server

Hard and Soft (305) 772-0430

Internal 91MB hard disk drive for the Macintosh II. Includes such features as 18ms access time; 1:1 interleave factor; and automatic head park and lock, with dynamic braking, at power down. The shock-mounted drive is easily installed, and comes complete with documentation and backup software.

Spectrum/8

SuperMac Technology (415) 964-8884 Spectrum/8 is an 8-bit video card for the Macintosh II. Spectrum/8 comes standard with a 64MHz oscillator for support of the SuperMac color and gray-scale monitors, and can be configured to support the Apple High-Resolution Monochrome Monitor and the AppleColor™ High-Resolution RGB Monitor.

Spectrum/24

SuperMac Technology (415) 964-8884 Spectrum/24 is a 24-bit video card for the Macintosh II. Currently, the Spectrum/24 card is available only to Certified Apple Developers. Spectrum/24 comes standard with a 64MHz oscillator for support of the SuperMac color and gray-scale monitors, and can be configured to support the Apple High-Resolution Monochrome Monitor and the AppleColor High-Resolution RGB Monitor.

SuperView II

SuperMac Technology (415) 964-8884 SuperView II is a high-resolution monochrome video card for the Macintosh II. It's designed for use with the SuperMac 19-inch monochrome monitor.

The Big Picture

E-Machines (503) 692-6656 The Big Picture is a 17-inch monochrome display for the Macintosh II. It provides 1,024- by 808-pixel (1 bit per pixel) resolution.

TurboMouse ADB 1.0 Kensington

(212) 475-5200

TurboMouse ADB is a replacement mouse/trackball device that measures only four by six inches. The gyroscopic mouse ball controls four optical sensors and a microprocessor, providing instantaneous cursor control. An automatic acceleration feature enables you to move the cursor accurately and quickly across the screen.

TV Producer

Computer Friends (503) 626-2291

TV Producer is a board that installs in the Macintosh II and allows the user to mix Macintosh graphics with live video. It is broadcast-quality signal NTSC RS170A standard. You can input and record to or from any video equipment.

Uni-Gate

Computer Friends (503) 626-2291

Uni-Gate is a Centronix-style parallel printer interface.

Universal Security Kit

Grimes Co. (714) 671-3931

The Universal Security Kit includes new insets and adapters.

Vista 1600

Cornerstone Technology (408) 279-1600

XP150i

SuperMac Technology (415) 964-8884 Designed for the Macintosh II, the Vista 1600 is a 19-inch display system with 1,600- by 1,280-pixel resolution. Its noninterlaced screen refreshes at a 67Hz frequency rate and has a video bandwidth of 200MHz, producing a flicker-free display that reduces eyestrain.

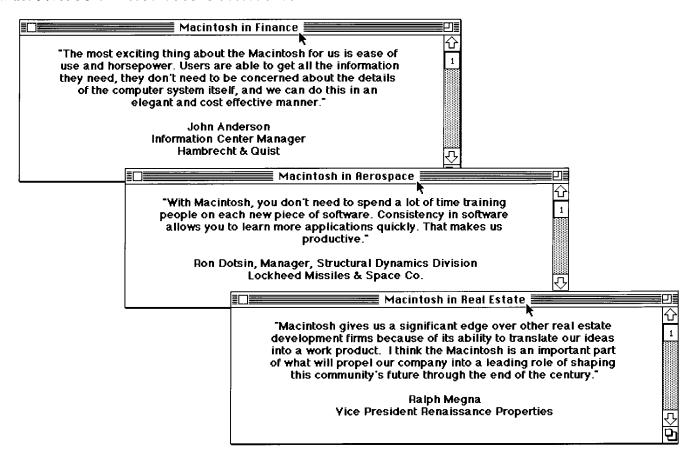
The XP150i is the fastest internal hard disk for the Macintosh II. It connects to the internal SCSI connector and can be installed in a matter of minutes.

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Macintosh Business Solutions





Benefits

Apple® Macintosh® business solutions offer these advantages to business users:

- You can improve both individual and workgroup productivity in every area—including word processing, information analysis, and information management—with the wide range of powerful and innovative Macintosh business software that's available today.
- You can easily incorporate—and modify—information from other applications, including MS-DOS
 programs. For example, you can move information from Lotus 1-2-3 into your Microsoft Excel spreadsheet and enhance it with Excel's superior analysis, formatting, and graphics capabilities. Or move
 graphics into a word processing document.
- You can reduce training time and support costs by as much as 50 percent with easy-to-learn programs that are a hallmark of the Macintosh.
- You can share information with other people in a workgroup and access information from a variety of
 computer environments. Macintosh systems easily connect not only with other Macintosh computers, but
 also with a variety of other computer systems, including MS-DOS, DEC™VAX™, and UNIX®.

Applications

You can use Macintosh business solutions for:

- Word processing: to create publication-quality business documents.
- Information analysis: using spreadsheets to get answers to complex problems quickly by exploring various "What if?" scenarios, determining your bottom line and calculating return ratios that are the basis of your business decisions.
- Information management with powerful database programs: to retrieve, organize, file, sort, and analyze the information you work with every day.



Macintosh Business Solutions

Typical hardware configuration

- · Macintosh II or Macintosh SE personal computer
- 20- to 80-megabyte hard disk drive
- Apple LaserWriter® IISC, LaserWriter IINT, or LaserWriter IINTX printer
- Options: Apple Extended Keyboard, full-page monitor, AppleCD SC[™] CD-ROM drive, AppleTalk[®] network with AppleShare[®] file server, DaynaFile disk drive (for MS-DOS compatibility)

Third-party software products

There are more than 3,000 Macintosh business solutions offered by other companies. Here are just a few of the business productivity software programs available to you.

Word processing

FullWrite Professional from Ashton-Tate
MacWrite from Claris
Microsoft Word from Microsoft
Microsoft Write from Microsoft
WordPerfect for the Macintosh from WordPerfect
WriteNow from T-Maker

Spreadsheets

Full Impact from Ashton-Tate Microsoft Excel from Microsoft Wingz from Informix Software

Database management

dBASE Mac from Ashton-Tate
Double Helix from Odesta
FileMaker 4 from Nashoba Systems
4th Dimension from ACIUS
Omnis from Blyth Software
Reflex Plus from Borland International
FoxBASE+/Mac from Fox Software

Integrated programs

Microsoft Works from Microsoft Trapeze from Access Technologies

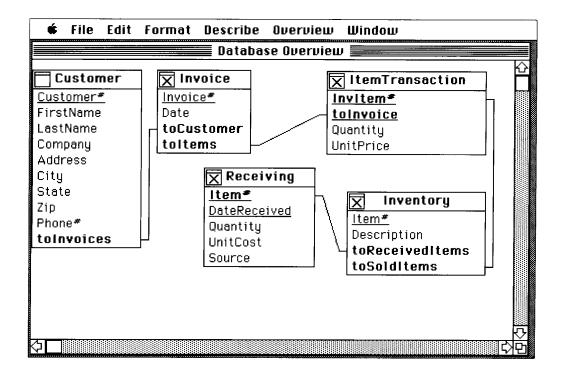
Apple Computer, Inc.

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Macintosh Database Solutions





Benefits

Apple® Macintosh® database solutions:

- Let you create sophisticated yet easy-to-use databases, because they give you greater control over your information and how you view it. You can build database applications faster, without technical assistance, so you can start using information to make your business run more smoothly much sooner than you can with conventional database-management products.
- Are much easier to use, because they take advantage of the intuitive point-and-click interface of the Apple Macintosh computer. To design data-entry screens and report formats, for example, simply select fields and drag them to the appropriate location on the screen. As always, what you see on the Macintosh screen is what you get when you print your reports. In addition to handling text and numbers, Macintosh database-management systems can also incorporate graphics and pictures to highlight reports and screen displays.
- Offer powerful application development tools based on relational database structures and industry-standard SQL (structured query languages). You can use procedural languages, for example, to develop multiuser database applications that offer unmatched flexibility and assure data integrity and security. To create powerful, complex, multitable queries in Macintosh relational databases, you simply draw lines between key fields in the tables; there's no need to know detailed query language syntax.

Applications

You can use Macintosh database solutions for:

- Customer files. Keep all of your business records in one place and use the same address information with Macintosh word processing programs for mailings. Information entered once can be reused anywhere else.
- Personnel records. Employee records are used by a variety of groups within a business. Imagine how much more valuable they'll be when you include employee pictures and graphics!

Macintosh Database Solutions

- Billing and account records. You'll streamline data entry and reporting by using a relational database, which allows you to quickly update information across many files, and cross-index complex information.
- Real estate and asset management. You can find specific records much more easily using multiple selection criteria and the point-and-click interface of the Macintosh.
- Inventory and vendor files. Keep track of large volumes of information while supporting the needs of a number of different users at the same time.

Typical hardware configurations

Macintosh SE or Macintosh Plus System

- Macintosh SE or Macintosh Plus personal computer
- 20-megabyte hard disk drive
- Apple Keyboard or Apple Extended Keyboard (for Macintosh SE)
- Apple ImageWriter® or LaserWriter® printer
- Database-management software
- Options: Additional disk storage, tape backup, additional RAM

This system is suitable for individuals or for small departments that need to manage moderate volumes of information such as personal records, telephone lists, or small parts and inventory lists. It's also flexible enough to provide room for growth.

Macintosh II System

- Macintosh II personal computer
- Internal 40-megabyte hard disk drive
- Apple Keyboard or Apple Extended Keyboard
- Apple High-Resolution Monochrome or AppleColor[™] High-Resolution RGB Monitor
- LaserWriter printer
- Database-management software
- Options: Additional disk storage, tape backup, additional RAM, scanner

This system permits the creation of sophisticated database applications that give you quick access to very large volumes of information via powerful query languages and application-development tools.

Macintosh II Database Server

- Macintosh II personal computer
- Internal 40-megabyte hard disk drive
- Apple Tape Backup 40SC
- 4-megabyte RAM expansion
- Apple Keyboard or Apple Extended Keyboard
- Apple High-Resolution Monochrome Monitor
- Multiuser database-management software
- Options: Additional disk storage, additional RAM

This system provides centralized storage for very large databases used by a number of people in a department or workgroup. It's capable of supporting the database needs of a small business or a department within a larger business.

Third-party products

Products available from other vendors for use with Macintosh database-management systems include:

Microsoft File from Microsoft

- Supports single files
- Ease of use and simple structure let you do useful work quickly
- Good tool for beginning user or someone with basic data-management needs

FileMaker 4 from Nashoba Systems

- Ease of use and learning have made this the top-selling database-management product
- Offers a variety of templates for viewing, entering, and printing data
- New multiuser capability allows easy data viewing of other users' files

Reflex Plus from Borland International

- Multifile relational database
- Provides default and validated fields
- Graphical display of files and fields used to define links between files

dBASE Mac from Ashton-Tate

- Extensive database design and development capabilities
- Incorporates procedural language facilities for complex operations
- Easy link definition for multifile relational databases
- Extensive use of color

Double Helix II from Odesta Corporation

- Provides advanced database capabilities for large, complex applications
- Allows use of graphics and photos in reports and forms
- Requires no changes in moving from single-user to multiuser applications
- Multiuser applications can use DEC[™] VAX[™] as server

Omnis 3 from Blyth Software, Inc.

- Very fast
- Offers extensive control over the application via procedural language
- Supports multiple users when used with a file server
- Includes extensive development capability

4th Dimension from ACIUS

- Extensive features including very friendly user interface
- Customization capability allows designer to define menus and options
- Permits MacDraw-style graphics including column, pie, and bar charts
- Rich procedural language is the foundation of all applications

FoxBASE+/Mac from Fox Software

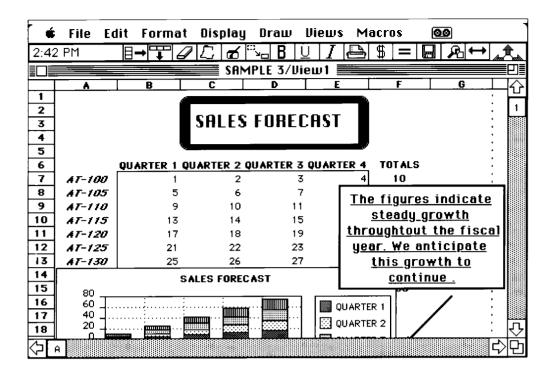
- Can execute MS-DOS FoxBASE+ applications without change
- Very fast
- Procedural language and graphics let designer customize applications
- Works through file server to access MS-DOS dBASE III files directly

Macintosh Database Solutions



Macintosh Spreadsheet Solutions





Benefits

Apple® Macintosh® spreadsheet solutions:

- Provide a combination of power and exceptional graphics capabilities. Today's Macintosh spreadsheets give you more functions, more cells, more kinds of charts and graphs, and more powerful programming capabilities.
- Let you work more productively and quickly. With pull-down menus making all commands accessible, you spend less time learning the software.
- Integrate traditional spreadsheet analysis with powerful desktop publishing capabilities. WingZ and Full Impact are two new products that allow you to combine data, graphics, and text in one worksheet. These "presentation spreadsheets" let you quickly turn worksheet data into impressive, finished reports and presentations.
- Adapt easily into a workgroup environment. Local area networks and linking software share
 data among workgroup computers including MS-DOS computers. For example, Macintosh
 spreadsheets share files with Lotus 1-2-3 and other MS-DOS software packages. Apple's
 AppleShare® Print Server software expands utilization of laser printers.
- Apply customized utility and programming packages that make your data management and presentation projects easier, faster, more productive, and more compatible.

Applications

You can use Macintosh spreadsheet solutions for:

- Financial analysis, to compare multiple scenarios, answer "what if" questions, and calculate the return ratios that are the basis of your business decisions.
- Tracking information streams, such as budget-to-actuals, sales, expenses, and cash flow.
- Basic record keeping, for at-a-glance management of personal and business information. You can then incorporate your data into worksheets for analysis and graphing.



Macintosh Spreadsheet Solutions

• Preparing dynamic, high-impact presentations that bring together tables, graphics, and text for reports and conferences.

Typical hardware configurations

- Macintosh II personal computer with Apple High-Resolution Monochrome Monitor or AppleColor™ High-Resolution RGB Monitor, or Macintosh SE personal computer
- Apple Keyboard or Apple Extended Keyboard
- 20- or 40-megabyte hard disk drive
- Additional megabytes of random-access memory (RAM)—2 to 4 megabytes recommended
- Apple LaserWriter® IINT (for PostScript® font generation and AppleTalk® communications), LaserWriter IISC (for individual users), or ImageWriter® II printer
- Options: Accelerator card and math coprocessor (for Macintosh SE), Hewlett-Packard HP-7475 or HP-7550 desktop plotter for color charts and graphics

Third-party products

Excel 1.5 from Microsoft

• Excel is the premier spreadsheet for the Macintosh, with integrated database and graphics. This latest version offers 131 built-in functions, an improved graphics interface, full-color support for the Macintosh II, multitasking support, and an application development environment that makes creating custom programs and templates easy.

Full Impact from Ashton-Tate

• Full Impact is the power spreadsheet for reports and presentations that couples state-of-the-art spreadsheet functions with strong graphics, drawing, and text-handling tools. With Full Impact's unique "icon bar"—a powerful extension of the Macintosh user interface—you can quickly build and execute any number of functions and macros simply by clicking on your own customizable icon.

WingZ from Informix Software

• WingZ is the graphic spreadsheet for business and technical professionals. It is an exceptionally powerful spreadsheet and graphics tool for sophisticated analysis and presentations. WingZ offers over 180 built-in functions. Dynamically linked data, graphs, and text can be combined into desktop-publishing-like style sheets to create custom forms, presentations, and reports. The graphics and charting capabilities of WingZ are unsurpassed, with rotating three-dimensional surface charts, wire frames, and histograms. WingZ also offers a powerful programming language similar to HyperTalk™.

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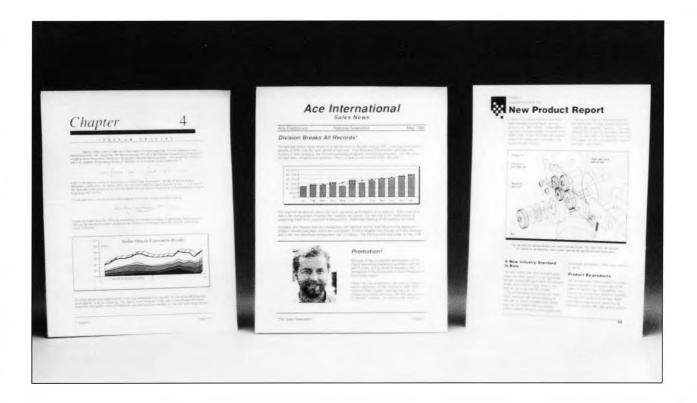
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Macintosh Word Processing Solutions





Benefits

Apple® Macintosh® word processing solutions offer:

- Better-looking documents, with high-quality text fonts in various sizes, integrated text and graphics, and basic layout features like multiple columns, lines, and boxes.
- An easier, more intuitive user interface, with "what you see is what you get" (WYSIWYG) page formatting, consistent operation across many applications, and one-touch, mouse-driven pull-down menus or, alternatively, keyboard equivalents for commands.
- The most advanced word processing features available, including as-you-type hyphenation, automatic footnote numbering, and automatic generation of indexes and tables of contents.
- Speedy performance for maximum productivity.
- Adaptation to a workgroup environment, with document sharing between Macintosh and MS-DOS computers and applications, data sharing among Macintosh computers via the AppleShare® File Server, and sharing of print peripherals with the AppleShare Print Server.

Applications

Macintosh word processing solutions enable you to produce:

- Reports and publications that integrate text and graphics. One picture may be worth a thousand words; it certainly takes up less space on the page and less time in your reader's busy schedule.
- Proposals and customer reports with a quality of appearance that reflects the quality of your thinking.
- Training manuals, product catalogs, scripts, policy manuals, and any other documents that require you to juggle parallel columns or competing areas of white space and text.
- Accurate, grammatical documents—even if your spelling is a bit shaky and your syntax slippery.
- Lengthy documents with sophisticated requirements such as footnotes, multiple columns, tables of contents, and indexes.

Macintosh Word Processing Solutions

Typical hardware configurations

Macintosh SE or Macintosh Plus System

- Macintosh SE or Macintosh Plus personal computer
- 20-megabyte hard disk drive
- Apple Keyboard or Apple Extended Keyboard (for Macintosh SE)
- 1 megabyte of random-access memory (RAM)
- Apple LaserWriter® IINT or IINTX (for PostScript® font generation and AppleTalk® communications), LaserWriter IISC (for individual users), or ImageWriter® LQ (for forms and special paper handling) printer
- Options: A full-page display, large-bin sheet feeders, an optical-character-reading (OCR) scanner, additional disk storage, additional RAM

Macintosh II System

- Macintosh II personal computer
- 40-megabyte hard disk drive
- Apple Keyboard or Apple Extended Keyboard
- Apple High-Resolution Monochrome Monitor or AppleColor[™] High-Resolution RGB Monitor
- 1 megabyte of RAM
- Apple LaserWriter IINTX, LaserWriter IINT, LaserWriter IISC (for individual users), or ImageWriter LQ printer
- Options: A full-page display, large-bin sheet feeders, an optical-character-reading (OCR) scanner, additional disk storage, additional RAM

Third-party products

FullWrite Professional from Ashton-Tate

A "next generation" package that combines a powerful word processor with the sophisticated layout capabilities usually found only in desktop publishing programs. Creates and edits images within the program. Wraps text around irregularly shaped graphics. Provides strong document management capabilities. Cross-references footnotes, endnotes, and bibliographies. Includes 100,000-word spelling checker and 220,000-word thesaurus. File-compatible with MacWrite, Microsoft Word, and ASCII text files.

Microsoft Word from Microsoft

• Combines powerful word processing with features like customizable menus, a QuickSwitch utility for linking to other applications, mathematical functions, style sheets, outlining, and other advanced features for the business user.

WordPerfect for the Macintosh from WordPerfect

• From the world leader in MS-DOS word processing, WordPerfect for the Macintosh includes the best features of the MS-DOS version—keyboard shortcuts, macros, a thesaurus, and document management—plus the benefits of the Macintosh interface: integrated graphics, variable type styles and sizes, and on-screen formatting without having to go to a "preview" mode.

Microsoft Write from Microsoft

• A simple word processor that prepares the novice user for an upgrade to the power of Microsoft Word. Features include support for columns and tables, vertical lines, page preview, and an 80,000-word spelling checker.

MacWrite from Claris

A basic word processor that incorporates keyboard shortcuts, a spelling checker with expandable 100,000-word dictionary, and control of typefaces, styles, and sizes. Handles documents up to 240 pages long.

WriteNow from T-Maker

• Straddles the line between basic and next-generation word processing. Features include an extensive "undo" capability, alternating binding margins, up to four columns on a page, and automatic backup of files.

Enhancements

Keyboard utilities

• QuicKeys, CE Software; Tempo, Affinity Microsystems

Document management

 SONAR, Virginia Systems Software Services, Inc; Document Compare and Document Modeler, Legalware Inc.; MARS, MicroDynamics Limited; TexSys, International Telesystem Corporation

Grammar checkers

• Word Tools, Aegis Development; MacProof, Automated Language Processing Systems

Translators

 Apple File Exchange, Apple Computer Inc.; MacLink Plus, DataViz, Inc.; The Interpreter, Interpreter, Inc.; VAX[™] products, Digital Equipment Corporation

Equation typesetters

 MathType, Design Science Inc.; Expressionist, Allan Bonadio Associates; Mac∑qn, Software for Recognition Technologies; MathWriter, Cooke Publications

Thesaurus utilities

• Word Finder, Microlytics, Inc.; Coach Merriam-Webster, Deneba Software

OCR scanners

• ReadIt!/OCR, Olduvai Software, Inc.; Dest TextPac, Dest Corporation; MacOCR, Microtek

Security systems

 MacSafe, Kent Marsh Limited; N'Cryptor, Mainstay; Packer, Bobbing Software; P/C Privacy, MCTel Inc.; Sentinel, SuperMac Software; The Nightwatch, Kent Marsh Limited

Sheet feeders (manufacturers)

• BDT Corporation; LaserConnection

Full-page displays

• Radius FPD, Radius, Inc.

MS-DOS connectivity

Apple PC 5.25 Drive and AppleTalk, Apple Computer, Inc.; DaynaFile, Dayna Communications, Inc.; AST 286 coprocessor, AST Research Inc.; 3Com 3+, 3Com Corporation; TOPS, TOPS, a Sun Microsystems Company

Macintosh Word Processing Solutions





Macintosh[®] Spreadsheet Feature Comparison

Macintosh Spreadsheet Feature Comparison

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	Microsoft Excel 1.5	WingZ	Full Impact	Lotus 1-2-3 Rel. 2.01
Spreadsheet Basics				
Maximum Worksheet Size	16,384 x 256	32,768 x 32,768	2,048 x 256	8,192 x 256
Memory Constraints	1 Megabyte	RAM	Virtual Memory	8 Megabytes
Sparse Matrix Memory	Yes	Yes	No	No
On-Line Help	Yes	Yes	Yes	Yes
Keyboard Equivalents	Yes	Yes	Yes	Yes
Icon Equivalents	No	Yes	Yes	No
Password Protection	Yes	Yes	2 Levels	Yes
Auditing Tools	No	Yes	No	No
"AppleShare" Aware"	Yes	Yes	Yes	No
Spreadsheet Analysis				
Built-in Functions	131	180+	100	89
Minimal Recalculation	Yes	Yes	Yes	No
Background Recalculation	No	Yes	No	No
English Names in Formula	Yes	Yes	Yes	No
Multiple WKS Open	Unlimited	Unlimited	8	No
Linked Worksheets	Unlimited	Unlimited	8	No
Linked Data, Graphics, and Text	Data/Graphics	Yes	Data/Graphics	Data/Graphics
What if? Tables	Yes	Yes	Yes	Yes
Matrix Arithmetic	Yes	Yes	No	No
Cell Annotation	No	Yes	No	No
Auto Data Series Entry	Yes	Yes	Yes	No
Spreadsheet Graphics				
No. of Chart Types	7	21	7	6
No. of Predefined Charts	42	Unlimited	Unlimited	N/A
Combination/Overlay Charts	Yes	Yes	Yes	No
Arrows on Chart	Yes	Yes	Yes	No
Free Text on Chart	Yes	Yes	Yes	No
Independent Axis Scaling	Yes	Yes	Yes	Yes
Linear/Log Scaling	Yes	Yes	Yes	No

	Microsoft Excel 1.5	WingZ	Full Impact	Lotus 1-2-3 Rel. 2.01
Presentation Capabilities				
No. of Colors Displayed	8	256	8	1
No. of Fonts on Worksheet	1	256	8	1
Bold, Italic	Yes	Yes	Yes	No
No. of Built-in Formats	19	32	9	6
Customized Formats	Yes	Yes	Yes	No
Variable Column Widths	Yes	Yes	Yes	No
Variable Row Heights	No	Yes	Yes	No
Text Fields (Basic WP)	No	Yes	Yes	No
Graphics/Drawing Tool	No	Yes	Yes	No
Use Scanned Images	No	Yes	Yes	No
Customized/Macros	••••			
Macros	Yes	Yes	Yes	Yes
Macro Recorder	Yes	Yes	Yes	No
Autoexec Macros	Yes	Yes	Yes	Yes
Custom Menus, Dialog Box	Yes	Yes	No	Yes
Definable Functions	Yes	Yes	No	No
Macro Error Messages	Yes	Yes	Yes	No
Database Management				
Integrated Database	Yes	Yes	No	Yes
Sort Levels	3	256	N/A	2
Maximum No. Fields/Search Criteria	255	Unlimited	N/A	150
Link Database to Worksheet	Yes	Yes	N/A	Yes
Data Entry Validation	No	No	N/A	No
Wild-Card Searches	Yes	Yes	N/A	No

Macintosh Spreadsheet Feature Comparison, continued

	Microsoft Excel 1.5	WingZ	Full Impact	Lotus 1-2-3 Rel. 2.01
File Compatibility				
WKS	Yes	Yes	Yes	Yes
WK1	Yes	Yes	Yes	Yes
WK1 Macros	No	No	Yes	Yes
SYLK	Yes	Yes	Yes	Yes
DIF	No	Yes	Yes	No
ASCII	Yes	Yes	Yes	Yes
Binary File Format	Yes	No	No	No
dbase II/III	No	No	Yes	No
Special Features				
MultiFinder [™] Support (Background Recalc)	X	X	X	
MultiFinder Support (Background Macros)	X	X		
Freeze Frames	X			
WP-SS Warm Links (Quick Switch)	X			
Mixed Text, Data, Charts		X	X	
3-D Surface Charts		X		
Chart Rotation		X		
Chart Elevation/Scaling		X		
Style Sheets		X		
HyperScript Language		X		
Customizable Icon Bar			X	
Zoom/Enlarge Feature			X	
Reduce Mode			X	

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Macintosh® Database Feature Comparison

Macintosh Database Feature Comparison



	Microsoft File	FileMaker 4	Reflex Plus	dBASE Mac	Double Helix	Omnis 3 Plus	4th Dimension
Data File Info							
Structure	Single file	Multifile	Relational	Relational	Relational	Relational	Relational
Full-Size/Residence	RAM	Disk	Disk	Disk	Disk	Disk	Disk
Data Files per Database	N/A	N/A	Disk	<30	Disk	24	99
Real Number Accuracy (Digits)	N/A	16	N/A	19	19	11	19
Record Info							
Maximum Records per Datafile	RAM	Disk	Disk	Disk	Disk	Disk	Disk
Maximum Record Length (Characters)	14,880	Disk	4,000	32,000	Disk	<25,000	Disk
Field Info							
Maximum Fields per Record	60	Disk	254	32,000	Disk	120	511
Maximum Text Field Size (Characters)	248 per Line	32,000	4,000	32,000	32,500	<25,000	32,767
Hidden Fields	No	Yes	No	Yes	No	Yes	Yes
Dynamic Field Size	Yes	Yes	Yes	Yes	Yes	No	Yes
Defaulted Fields	No	Yes	Yes	Yes	Yes	Yes	Yes
Validated Fields	No	Yes	Yes	Yes	Yes	Yes	Yes
Calculated Fields	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Indexed Fields	No	All Fields	No	Disk	Disk	12	32,767
Key Fields	No	No	Yes	Yes	No	No	No
Unique Fields Option	No	Yes	(Key only)	Yes	No	Yes	Yes
Choice Fields	No	No	No	Yes	No	No	Yes
Field Data Types							
Boolean (Logical)	No	Yes	Yes	Yes	Yes	Yes	No
Currency (Dollar)	Yes	Yes	No	Yes	Yes	Yes	No
Date	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Integer	No	No	Yes	No	No	No	Yes
Picture	No	Yes	No	Yes	Yes	No	Yes
Real Number	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time	Yes	No	Yes	Yes	Yes	Yes	No

	Microsoft File	FileMaker 4	Reflex Plus	dBASE Mac	Double Helix	Omnis 3 Plus	4th Dimension
Import Info							
Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SYLK	Yes	Yes	No	No	Yes	Yes	Yes
DIF	No	No	No	No	Yes	Yes	Yes
Forms (Entry and Report)		••••					
Number of Reports per Data File	RAM	Disk	Disk	Disk	Disk	<240	<32,767
Number of Entry Forms per Data File	1	Disk	2	Disk	Disk	12	<32,767
Automatic Report Generation	Yes	Yes	Yes	Yes	Yes	No	Yes
Automatic Entry Form Generation	Yes	Yes	Yes	Yes	Yes	No	Yes
Drawing Tools (5=Highest)	2	3	4	4	2	1	4
All Fonts	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Customizable Menus	No	No	No	Yes	Yes	Yes	Yes
Machines							
Macintosh 128K	No	No	No	No	No	No	No
Macintosh 512K	Yes	Yes	Yes	No	No	Yes	No
Macintosh 512K Enhanced	Yes	Yes	Yes	No	No	Yes	No
Macintosh Plus	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macintosh SE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macintosh II	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VAX^{TM}	No	No	No	No	Yes	No	No

Macintosh Database Feature Comparison, continued



	Microsoft File	FileMaker 4	Reflex Plus	dBASE Mac	Double Helix	Omnis 3 Plus	4th Dimension
Security							
Passwords	No	No	No	Yes	No	Yes	Yes
Command Restriction	No	No	No	Yes	Yes	Yes	Yes
Goodies							
Comes with Templates (Predesigned)	3	10	8	1	None	1	4
Searching/Sorting							
Search on How Many Fields (Levels)	6	Disk	Disk	Disk	Disk	50	Disk
Sort on How Many Fields (Levels)	1	Disk	Disk	Disk	128	9	Disk
User-Defined Sorts and Searches	Yes	Yes	Yes	Yes	No	Yes	No
Procedural Language	No	No	No	Yes	Yes	Yes	Yes
Calculations							
Command/Prompter/Icon Driven	Command	Prompter	Prompter	Prompter	Icon	Prompter	Prompter
Financial Functions	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Math Functions	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Date Arithmetic	No	Yes	Yes	Yes	Yes	Yes	Yes
Summary Functions	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trigonometric Functions	Yes	No	Yes	Yes	Yes	No	Yes
Multiuser	No	Yes	No	No	Yes	Yes	Yes

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A Comparison of Macintosh and IBM PC-Compatible Word Processing Software

WOHL ASSOCIATES

Word Processing is a nearly universal application. Everybody processes words. Originally performed on expensive, dedicated, special purpose machines, today word processing is performed on personal computers—IBM® PC's and compatibles and Macintosh® computers.

This Evaluation

This comparison looks at the most popular business word processing software packages for business users of both IBM PC's and compatibles and Macintosh, as selected by Apple Computer, Inc. and Wohl Associates. Differences between products on IBM PC and compatible platforms and Apple's Macintosh are usually caused by:

- Differences in the performance of the underlying hardware. Apple® Macintosh computers are based on the Motorola 680n0, which generally offers more power than the analogous Intel 80n8x processor. Such performance differences make certain high-end functions possible or practical sooner.
- The graphical user interface world of the Macintosh permitted some complex things to be done easier or sooner than the code-and-function interfaces common on IBM PC-compatible word processing products.
- The graphics orientation of many Macintosh software developers has caused them to press for more graphics and layout features; these valuable features are often then ported to equivalent IBM PC's and compatibles (often somewhat later).

In this report, we are using a technique we have often found useful — comparing high-end packages by looking at their high-end features. That is, all of these products do a good job at creating and editing text — just look at the features in the **Power Word Processing** part of our charts! We are stressing the features that differentiate the products and cause users to buy one product rather than another. Emphasis is placed on differences in the interface and in formatting features that permit the production of high quality output.

The Word Processing Software Market

Word Processing is the business application most likely to be found on a personal computer.

Software developers have created hundreds of word processing packages, designed to appeal to widely varying types of potential users. But the "winners," the word processing software packages that sell at higher prices and in volume to corporate business users, are few in number.

In today's word processing marketplace, where an IBM PC or compatible or a Macintosh plus software equals word processing, a few firms divide most of the word processing software market. These firms offer high function products, coupled with high quality service and support, and high visibility (generally bought with marketing budgets, but often fueled by word-of-mouth advertising from satisfied customers).

Lately, as the number of personal computer users nears the 20 million mark — and our ability to train and support increasing numbers of users gets stretched thinner — the ease with which a product can be learned becomes more important, as well as the day-to-day ease with which it can be used. (continued on page 4)

A Comparison of WP Packages Prepared for Apple Computer by Wohl Associates

June 1988

Word Processing Product Comparison

	for the Macintosh®	for the Macintosh	FullWrite 1.0 for the Macintosh	Microsoft Word 4.0 for the IBM® PC	WordPerfect 5.0 for the IBM PC	DisplayWri 4/2 for the IBM PC
OWER WORD PROCESSING						
ext Entry/Editing	(maritmetrareasessesses)					
Keyboard Shortcuts						
Full Editing Functions		-	•			-
Insert, Delete Move, Copy	•	-	-	-	-	•
Tabs, Indents			_		•	•
Search and Replace Search for Control Characters	-	•	-		-	-
General Undo	•	•	•	•	= 1	_
Typeover Change Case			_			-
Dynamic Pagination		•	-	_		
Forms Fill-in		•		•	•	
tyle						
Strikethrough				•		
Superscripts/Subscripts		•	-		-	
Underline Bold			-			
Italics			•	•	•	2
Double Underlining			-			Not Auto
Centering Justification				-	-	■ ²
Features Headers/Footers	_	-		_	_	
Footnotes/Endnotes				-	-	3
Hyphenation						
Widow/Orphan Control Revision Marking (Insert)						
Revision Marking (Insert) Revision Marking (Delete)						
Mail Merge			•			
Math Calculations				•	•	
Macros (Glossary)	•					
Learn Mode Sort Capability					-	
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Style and Spelling Aids						
Interactive Spelling Checker Interactive Thesaurus				-	•	
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Automatic Index			•	•		4
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Automatic Bibliographies	_		•	_	_	_
Sectioning/Chapters			•		•	
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Display Options Integrated Text and Graphics WYSIWYG Interface Pull-down/Pop-up Menus Variety of Font Styles Variety of Font Sizes Headers/Footers Display Columns Display Color Support Page Preview Multiple Pages on Screen Graphics Integration Paste-in Capability Create with Program Toolbox Provided Draw Lines and Boxes Draw Circles and Rectangles Text Flow around Graphics	Preview Preview Preview	Preview Preview	Preview	6 6 6 6 6 6 6 6	Preview Preview Preview Preview Preview	Preview Preview
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Display Options Integrated Text and Graphics WYSIWYG Interface Pull-down/Pop-up Menus Variety of Font Styles Variety of Font Sizes Headers/Footers Display Color Support Page Preview Multiple Pages on Screen Graphics Integration Paste-in Capability Create with Program Toolbox Provided Draw Lines and Boxes Draw Circles and Rectangles Text Flow around Graphics Gray-Scale Text and Graphics Layout Column (Newspaper) Column (Parallel) Kerning Landscape Orientation Equations Changes by Visible Guides OTHER FEATURES	Preview Preview Preview	Preview	Preview		Preview Preview Preview Preview Preview	Preview Preview
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Display Options Integrated Text and Graphics WYSIWYG Interface Pull-down/Pop-up Menus Variety of Font Styles Variety of Font Sizes Headers/Footers Display Columns Display Color Support Page Preview Multiple Pages on Screen Graphics Integration Paste-in Capability Create with Program Toolbox Provided Draw Lines and Boxes Draw Circles and Rectangles Text Flow around Graphics Gray-Scale Text and Graphics Cayout Column (Newspaper) Column (Parallel) Kerning Landscape Orientation Equations Changes by Visible Guides OTHER FEATURES File Handling Selective Document Retrieval Import/Export File Formats Password Protection	Preview Preview Preview	Preview Preview Preview	Preview		Preview Preview Preview Preview Preview 8 8	Preview Preview
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The Results

The conclusions are <u>not</u> startling to anyone who follows word processing software in both the IBM PC and compatibles and the Apple Macintosh markets.

- There is now a selection of full-fledged word processing products for the Macintosh environment. These products offer virtually all of the **Power Word Processing** features required for users who perform extensive, complex word processing tasks.
- Macintosh word processors are easier to learn. This is an effect of the persistent menus and the WYSIWYG presentation of text (and graphics). It is especially easier to learn a <u>second</u> word processor in the Macintosh environment, where the interface remains very similar from product to product.
- The best Macintosh word processors are ahead of the best IBM PC and compatible word processors in several areas, particularly in the area we call "Next Generation Word Processing."

Macintosh products can take advantage of the graphics display and processing power of their hardware environment to permit the user to create and edit directly in WYSIWYG, final format, mode. This allows the user to get immediate feedback from his or her editing decisions and avoids the need to toggle back and forth between two related environments. And this makes complex formats much easier.

Meanwhile, this generation of IBM PC and compatible word processing products perform text creation and editing in a fixed character display and only show final output appearance in a Page Preview mode.

In Conclusion

Full power word processing is now readily available on the Macintosh platform, and the newest enhancements to

word processing—desktop publishing capabilities — are appearing here first. Users can produce complex, aesthetically pleasing output with minimal training, and they can easily move from product to product, assisted by a consistent, easy-to-learn interface.

(continued from page 1) A few facts are clear:

• Systems are easier to learn and easier to use when they offer:

Persistent menus (with some part of the menu always on the screen); **point-and-pick metaphor** of selecting functionality (generally, this means using a mouse); and

WYSIWYG presentation of text plus graphics (with text on the screen "matching" — as closely as possible — text to be printed)

 The Apple Macintosh was designed and managed from its inception to take advantage of the graphical user interface environment

It is no coincidence that (on average) each Macintosh user routinely uses more applications programs than an IBM PC or compatible user — it is because the design choices of the Macintosh computing environment support and encourage that possibility.

It is not just the graphical user interface environment that counts: it is the disciplined and consistent management of this environment. IBM PC's and compatibles will now move to such interfaces, but they must continue to compromise to accommodate older hardware plus six or seven years of programming history and more than 25,000 existing application programs with millions of users.

A Comparison of WP Packages Prepared for Apple Computer by Wohl Associates Amy D. Wohl

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